UNIVERSITY OF WINCHESTER

A demographic analysis of mortuary practice across time and space in south-east England during the Early Neolithic period

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Doctor of Philosophy

April 2019

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for a postgraduate research degree of the University of Winchester.

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ACKNOWLEDGEMENTS

I would like to thank my supervisors, Dr Nick Thorpe and Dr Keith Wilkinson for their invaluable help and advice during the seven years of my research. Thanks are also due to Dr Katie Tucker for her advice and support.

I am grateful to the following curatorial staff who provided access to human remains archives: Andy Maxted (Brighton Pavilion and Museums), Dave Allen, Helen Rees and Ross Turle (Hampshire Cultural Trust), Emma O'Connor (Sussex Archaeological Society), James Sainsbury (Worthing Museum), Amy Roberts (Novium Museum), Robert Kruszynski and Elissa Menzel (Natural History Museum), Emily Lansell (Croydon Museum), Angela Houghton (Reading Museum), Neil Wilkin (British Museum), and Ruth Howard (West Berkshire Museum Service). Thanks also to Jon Sygrave and Paola Ponce of Archaeology South-East for providing data on the Whitehawk reassessment, Peter Clark of Canterbury Archaeological Trust for information on the excavations at Chalk Hill, and Jacqueline McKinley of Wessex Archaeology and CEMEX UK for allowing me to use data on the burials from a newly discovered Early Neolithic monumental site in Berkshire.

Finally, I would also like to thank my husband, Nick Cansfield, and my parents, Peter and May West, for their support, both moral and financial, without which I would not have made it through the process. Thanks also to my sons, Matt and James, for their patience while I studied as they grew up and went through their own secondary education, and finally to Basil and Polly, my constant canine companions during the many hours spent at my desk.

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ABSTRACT

A demographic analysis of mortuary practice across time and space in south-east England during the Early Neolithic period

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In the study of past societies, differential ritual treatment of the dead can be indicative of individuals' identities in life. The archaeological record for burials in the Early Neolithic period (4000–3300 BC) comprises a disparate body of evidence collected over hundreds of years since the antiquarian investigations of the 18th century. As such, it poses certain challenges arising from the variety of archaeological methods deployed and the resultant data, and the different interpretative frameworks used over time as the discipline has developed and practices have gone in and out of fashion, and indeed as modern society itself has changed. Furthermore, burial practice for the period has received relatively little attention in the south-east compared to the south-west side of England. Set within the radiocarbon dating frameworks which have recently transformed the study of this period, the evidence for burial locations, positions, orientations and grave goods is subjected to osteoarchaeological, statistical, palaeodemographic and archaeothanatological analyses to build a demographic profile of the Early Neolithic burial population and practices in south-east England.

This research has found that there are some aspects of demographic variation geographically across the region and in the locations of burials, with causewayed enclosures comprising a more egalitarian burial population than long barrows. This regional variation seems to result from the temporal spread of cultural ideas at this time. Burial orientations and grave goods also highlight demographic differentiation and indicate potential localised practices and customs. It is suggested that the archaeologically visible burial practices in the record for the Early Neolithic period of south-east England, which are limited in quantity, rather than memorialising the dead, may reflect an overriding concern with containment of deceased individuals of all demographic groups who were feared, perhaps due to their actions or relationships in life, for the protection of the living.

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CHAPTER 1 – BACKGROUND, AIMS AND STRUCTURE OF THESIS

> '…archaeologists can approach ways in which the ritual treatment of the dead body was a means of reproducing a sense of identity and community in the past...similarities and differences noticeable over time and space may provide an insight into changing identity processes.' (Nilsson Stutz, 2010)

This research aims to elucidate mortuary practice in the Early Neolithic of south-east England, focussing on its demographic elements, by synthesising the evidence of the archaeological record within the dating frameworks now available. The Early Neolithic is generally accepted to span the period 4000 to 3300 BC and in recent years the *Histories of the Dead* (Bayliss and Whittle, 2007) and *Gathering Time* (Whittle *et al.*, 2011) projects have provided an invaluable framework of radiocarbon dates for long barrows and causewayed enclosures, along with reassessments of individual archives, such as the megalithic monument at Coldrum (Wysocki *et al.*, 2013) and analysis of specific areas of osteoarchaeological analysis, such as cranial trauma (Schulting, 2012). For the first time there is a body of significant, sequential evidence for the timeframes of monument building and use in the Early Neolithic against which studies of other aspects of life in this period can be set.

Furthermore, more recent investigations have resulted in additions to the record, such as the human remains from Itchen Farm (Lewis and Preston, 2012) in Hampshire, Eton rowing course (Allen and Welsh, 1996 and 1997) in Berkshire, Chalk Hill (Shand, 2001; Clark *et al.*, 2019) in Kent, Yabsley Street (Coles *et al.*, 2008) in Greater London, Shepperton (Jones, 1990) and Staines (Robertson-Mackay, 1987) in Surrey.

Since the first investigations of Early Neolithic sites by antiquarians in the 18th and 19th centuries there have been many advances in the fields of archaeology generally and osteoarchaeology in particular, leading to the use of different techniques in the modern discipline, such as those for aging and sexing skeletal remains and estimating the minimum number of individuals in commingled assemblages. As a result of these developments there has been a trend towards the reassessment of skeletal remains in historic archives and these studies have provided valuable updated data in the archaeological record. A particular advance in the field with the potential to challenge previous interpretations of mortuary practice is the adoption of archaeothanatology to reassess excavated burial positions and the terminology used to describe them (e.g. Duday, 2009). This taphonomically-based methodology can be used to analyse the decomposition of a corpse in its burial environment to understand the circumstances of its deposition in relation to those observed when it was excavated, which can differ. This project therefore has a number of significant developments in the field to draw upon in order to meaningfully revisit the archaeological record.

Analysis of this period is, however, complicated by a number of factors that make precision difficult. Firstly, there are many inconsistencies in the data available, including the different standards of excavation and recording over a long timeframe of investigations spanning several centuries, the inherent imperfections in both past and present methods of osteological analysis, limitations to the data that can be ascertained, and variations in terminology used, leading to potential ambiguity. At best, some excavations have resulted in thorough, well-recorded investigations with well-curated human remains, assessed in recent times using modern techniques including radiocarbon dating of the skeletons; at worst are brief mentions of human remains that were found but have since been lost; and there are several different levels in between. However, despite the obvious hurdles to be overcome in the study of Early Neolithic burial practice, the alternative would be to neglect the data that exists and the potential insights it may give into the way people were treated potentially as a result of their sex or age. It therefore seems a worthwhile endeavour to work around the difficulties posed by the shortcomings in the archaeological record to see what it can reveal. This view is supported by recommendations for further work made previously by other researchers. When summarising his work on *Attitudes to Disposal of the Dead in Southern Britain 3500 BC-AD43*, Bristow (1998) commented that he had only noted a slight distinction between the sexes in mortuary processes and suggested further, more in-depth work was necessary to test this. Schulting (2009 and 2012) has highlighted the need for comparison of demographic profiles of populations in different burial contexts, including non-monumental ones, and the need to revisit interpretative frameworks and analysis regarding gender roles in past societies has been urged by Edwards and Pope (2013).

This research, therefore, has the following aims:

- To synthesise the variety of existing data and analyse this in its updated form within the dating framework now available
- To question previous interpretations of sex, age and burial positions and revise these where appropriate
- To scrutinise and update the data in terms of observable demographic patterns of burial practice for people over time and space, considering burial locations, positions and orientations, and grave goods

Overall, this project amalgamates the diverse data in the archaeological record to date, combining disparate evidence into a workable whole which is analysed to propose patterns of mortuary practice that characterise the demography of the Early Neolithic period in south-east England.

The next chapter examines in detail previous work undertaken on Early Neolithic mortuary practice, and Chapter 3 details the materials and methods employed in compiling and analysing the database of burials in Early Neolithic south-east England used for this research, which is attached at Appendix 1. Chapter 4 then presents the findings of this research, comprising the evidence from the archaeological record, personal osteological assessments and archaeothanatological analysis by the author, broken down by categories and demographic groups. Following this, Chapter 5 synthesises the evidence for the region via detailed analysis of the burials by location type. Chapter 6 then discusses the findings and analysis in detail for the region against the wider background of Early Neolithic mortuary practice, and finally Chapter 7 draws conclusions and suggests directions for further investigation.

CHAPTER 2 – LITERATURE REVIEW

There is much variety in burial practice for the Early Neolithic in south-east Britain, both in terms of locations used and types of burial. However, this is set against a small corpus of burial data for the period and therefore suggests that the majority of disposals of the dead used methods invisible to archaeologists (Cummings, 2017:91). Those burials that have been found in the region are located in chambered tombs and earthen long barrows, round or oval barrows, causewayed enclosures, flint mines and other, non-monumental locations. Burial practices evident range from excarnation and disarticulation, cremation and the use of fire, possibly cannibalism, association with animals and inclusion of grave goods. Previous research on these burial places and practices is described below, followed by interpretations of these, temporality and demography.

Burial Places

Chambered tombs/Earthen long barrows

Overall, most human remains in the Neolithic have been found in tombs and these have been shown to represent collective, successive deposition over time (Fowler, 2010). Although Early Neolithic burials are commonly characterised as being disarticulated and fragmentary, in fact one or more articulated bodies are often found in barrows and tombs and the dominant rite in southern England may have been the deposition of articulated remains (Bayliss and Whittle, 2007:123), for example at Lanhill in Dorset where a complete articulated skeleton had been deposited between groupings of long bones and skulls (Thomas, 1999; Beckett and Robb, 2006). The spatial layout of chambered tombs varies considerably between types and regions and the burials within them range from two or three to nearly fifty individuals (Thorpe, 1996:163) indicating differences in approach within a broadly similar typology. Thomas (1999:136) points out however that it is important to treat any identified pattern of mortuary practice in chambered tombs and earthen long barrows as potentially just the 'last stage in a complicated series of events'. These events include the deposition and removal of disarticulated human remains, at times with emphasis on particular skeletal elements such as skulls and long bones being placed together away from the rest of the remains, for example at Lanhill (Figure 2.1) where a mass of long bones was stacked between two groups of skulls (Keiller and Piggott, 1938:128). Barrows are often likened to churches due to their visible locations of tradition, ancestral importance to communities and role as entry point to the supernatural world (Field, 2006:169). The construction of long and oval barrows has been interpreted as the creation of 'cultural archives', placing or increasing a claim over the land (Russell, 2002:143-5; 2004). A synthesis of the archaeological record for non-megalithic long barrows in Britain compiled in the

1990s provides comprehensive data by region including the human remains and radiocarbon dates, with the author concluding that the mortuary monuments of Britain belong to a greater phenomenon of Atlantic Europe but are distinctive in their own right (Kinnes, 1992:140).

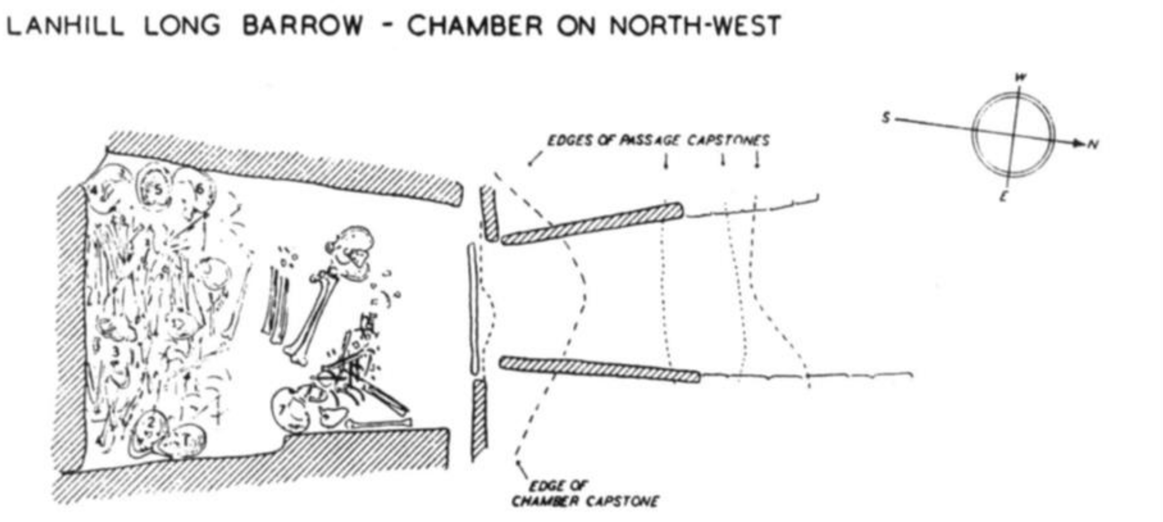


Figure 2.1: Plan drawing of human remains deposit in north-west chamber at Lanhill long barrow (Keiller and Piggott, 1938:126, figure 2)

The small quantity of human remains recovered from Neolithic monuments overall led to the view that they were used for burying people from particular families (Cave, 1938) or perhaps those who died in conflict, or that monuments were burial places for a social elite or places to conceal social inequalities (Shanks and Tilley:1982). Alternatively, Piggott (1954:37) argued that some human bone deposited in and around monuments could have resulted from trophy taking, for which there is ethnographic evidence. Ashbee posited that there was a population crisis resulting from soil impoverishment due to deforestation and cultivation, a cause-and-effect not understood by Neolithic people who resorted to magical rites such as votive deposits in the form of occupational debris in long barrows (Ashbee, 1978). More recently the effects of taphonomic processes on the preservation of skeletal remains have been considered, leading to natural explanations for a scarcity of burials (e.g. Bello and Andrews, 2006).

In recent years some programmes of work have been carried out to reassess the human remains assemblages from long barrows, for example Thomas and Whittle (1986) looked at patterning in skeletal assemblages (via secondary sources), Schulting and Wysocki (2005) have investigated cranial trauma, and Smith and Brickley (2009) have re-examined long barrow archives. AMS dating programmes have provided important data for Neolithic sites, for example a study of the Cotswold-Severn funerary monuments has revealed that variations in the extent of disarticulation do not necessarily coincide with the chronology of their deposition (Smith and Brickley, 2006). The human remains assemblage from Wor Barrow in Dorset has recently been subjected to an osteoarchaeological reassessment and direct dating programme to reveal for the first time the chronology of burial activity there and the relationship between the different phases (Allen *et al.*, 2016). A study of evidence for canid chewing in Neolithic human skeletal remains from Adelstrop barrow in Gloucestershire has been argued to demonstrate the practice of excarnation (Smith, 2006). This reassessment of existing archives has proved a valuable endeavour, adding to and amending the archaeological data, although it is often limited by the standard of the original excavation and recording practices. There has however been a concentration on certain areas and groupings creating a 'geographical bias…favouring the visible and popular monuments of Wessex' (Whittle *et al.* 2007; see also Edwards and Pope, 2013:461).

There is a dearth of modern long barrow excavations with the exception of Haddenham in Cambridgeshire (Evans, 1988; Evans and Hodder, 2006), Millbarrow in Dorset (Whittle, 1994) and Ascott-under-Wychwood in Oxfordshire (Benson and Whittle, 2007) and a general move towards non-destructive investigation has slowed down further addition to the record. Prior to Haddenham, the most recent long barrows to have been fully excavated were Hazleton North in Gloucestershire, between 1979 and 1982 (Saville, 1990), and earlier fieldwork at Haddenham between 1985 and 1987. Research is therefore heavily reliant upon old archives and their inherent inconsistencies. However, relative chronologies of Neolithic monuments based on burial traditions and artefactual evidence have demonstrated the presence of round barrows and ring ditches in the Neolithic (Kinnes, 1979), a framework which remains relevant and useful for this class of monument.

Causewayed enclosures

Causewayed enclosures are the earliest recorded monuments designed to enclose space and came into being when deposition was introduced. There has been much debate about the function of causewayed enclosures, and it is thought that the creation and use of such monuments may have enabled groups to build and retain links to each other and to the landscape and, in the case of human skeletal remains, to their ancestors (Oswald *et al.*, 2001). Both disarticulated and articulated remains are found within ditches at enclosures and are significant within the Early Neolithic record for south-east Britain, with remains in both primary and secondary phases of most enclosure ditches. Examples include sites such as Whitehawk in Sussex, where four complete skeletons were found including one of a young child and that of a young woman with a neonate (Ross Williamson, 1930; Curwen, 1934 and 1936) and Shepperton in Surrey where a male skeleton and probable female torso were found (Jones, 1990); by far the biggest assemblage is the one from Hambledon Hill in Dorset where numerous human remains were recovered (Mercer and Healy, 2008).

Isolated bones such as skulls and long bones are found in multiple locations including causewayed enclosure ditches, pits, quarry ditches which flank long barrows, and ditches of linear cursus enclosures (Thomas, 1999:660). A study of skeletal elements in Wessex long barrows found quite a different picture to that for enclosures with long bones more frequently found in long barrows than skulls and vice versa in the case of causewayed enclosures (Thorpe, 1984). Articulated burials tend to appear later than disarticulated deposits at causewayed enclosures (Oswald *et al.*, 2001). This project will revisit these findings to test their accuracy against the present day archaeological record.

Causewayed enclosures have often been linked to long barrows by virtue of their proximity to each other in a number of instances, such as the causewayed enclosure at Hambledon Hill and the long barrow at Knap Hill in Dorset (Oswald *et al.*, 2001:114; Ashbee, 1984; Renfrew, 1973; Cunliffe, 1993). Sometimes clusters of long barrows can be found near to causewayed enclosures, for example in one study of the prehistory of Cranbourne Chase (Barrett *et al.*, 1991) the barrows were all found to be within 10 km of the enclosures, which reflects a similar pattern found in Denmark (Madsen, 1988). This has been interpreted as indicating the use of causewayed enclosures as locations for excarnation of human remains taking place prior to deposition in barrows, for instance at Maiden Castle and its proximal barrows in Dorset (Oswald *et al.*, 2001:114) and similarly Hambledon Hill (Tilley, 1994). Causewayed enclosures have also been considered in respect of their proximity to each other in local and regional contexts. A recent study of activity at nine causewayed enclosures in East Anglia, Sussex and Wessex argued that, although some enclosures located close to others were used for specific roles expressed by the structured deposition of cultural material, the role of everyday activities should not be overlooked in preference to apparent ritualistic interpretations (Albrecht, 2014). There seems to be value in considering the wider depositional picture when assessing the human remains within causewayed enclosures and seeking patterns locally and regionally in addition to individual site studies.

The question of whether causewayed enclosures had a defensive function has been much debated and convincing evidence exists at Hambledon Hill and Crickley Hill, for example, of aggressive attacks on the structures themselves along with embedded arrowheads in two young male skeletons from Hambledon Hill and more than four hundred leaf arrowheads found at the entrance to Crickley Hill (Mercer, 1980 and 1988; Dixon, 1988; Schulting, 2005). However, the extent of violence in these locations is difficult to ascertain via skeletal evidence alone as arrows would mostly have lodged in soft tissue rather than bone (Schulting, 2005:108). The nature of violence at causewayed enclosures has been described as having been small-scale or highly ritualised in nature rather than warfare in our modern-day sense (Russell, 2002:94), however it has been argued that conflict in the Neolithic was more complex than any of the generalised theories of warfare can satisfactorily explain (Thorpe, 2006).

Flint mines

In the early 20th century Clark and Piggott (1933) argued that flint mining had begun in the Early Neolithic and was linked to the Windmill Hill culture. They argued that subterranean flint was usually – but not always - superior in quality to surface sources and that flint mines satisfied a common need and were probably centres of trade. Some 70 years later, Topping and Lyntott (2005) were able to use radiocarbon dating in combination with the large volume of artefactual and other excavation data to illustrate that the main period of activity for flint mining in Sussex was the first half of the fourth millennium cal BC with some limited evidence for mining later than this; they argued that flint mining would have been an episodic, perhaps seasonal endeavour.

Due to the functional connotations of mining, flint mines do not fit neatly into the monumental class of burial location of the Early Neolithic of southern England, however potentially ritualistic elements of their existence and utilisation make a non-monumental classification equally problematic, potentially leading to an alternative, 'third way' categorisation for them. The number of flint mines within the Sussex mortuary landscape specifically provides a unique opportunity to consider their role alongside causewayed enclosures in particular (Oswald *et al.*, 2001) and also in relation to earthen long barrows, more so now that an absolute dating framework is emerging. It has been argued that non-functional elements of the flint mines indicate ritualistic activity at play rather than simple pragmatism (Topping, 1997; Russell, 2001a and 2001b; Topping and Lyntott, 2005). A consideration of the functionality of flint mining has highlighted that on the chalk of the South Downs the mines are restricted to smaller areas than the existing flint deposits (Barber *et al.*, 1999:Figure 1) and the flint extracted is not always the best quality in the local area (Field, 2004:160-1) indicating something other than pragmatism as the main concern for this endeavour. Drawing parallels with earthen long mounds, for which the disposal of human remains may not have been the main reason for their construction, Russell (1999:94-113 and 116-22) suggests that the construction, composition and location of flint mines may have been more important factors than the actual extraction of flint. Elsewhere, recent excavations at the Neolithic variscite mines at Gava near Barcelona in Spain have found that burials there were contemporary with the peak of mining activity. This has been interpreted as the mines having been seen as special places central to the community, providing a focus both in life and in death (Borrell *et al.*, 2015).

A study of flint mining sites in western Europe has identified a common ideology based on cultural choices and structured depositional practices, highlighting the possibility of this linking Neolithic communities across the English Channel with those in southern Britain (Wheeler, 2008:161). It has been suggested that the sinking of deep mine shafts with radiating galleries reflects existing practice in neighbouring part of north-west Europe between 4685–4250 cal BC (Whittle *et al.*, 2011:257) and that when deep mining appeared in southern England, some time prior to the fourth millennium BC, it was already well underway in Europe, for example at Spiennes in Belgium, demonstrating a common method and hence connection between the two regions (Baczkowski, 2014). A recent study of the radiocarbon dating chronology of European flint mines has indicated a link between flint mining and population patterns. It is argued that fluctuating demand results from increased or decreased contact between communities and demographic factors such a bigger population needing more tools to be produced (Kerig *et al.*, 2015:116-164).

The relationship between flint mines and causewayed enclosures and their locations has been explained as representing 'seasonal anchor points' for the deposition by groups of socially significant material (Russell, 2002:143), highlighting the relevance of considering the monumental landscape as a whole, spatially and chronologically.

Chalk art, both portable and *in situ*, apparently contemporary with mining activity, has been found in a number of flint mines in various contexts. At Cissbury, for example, there are linear decorations, a cup mark and a circular design within the mine shaft bases, further markings within the galleries, as well as decorated blocks with linear designs and also a zoomorphic figure. Markings such as these have been found to have parallels with those on other Neolithic sites and have been interpreted as representing an Early Neolithic art tradition (Teather, 2011) and, again, this perhaps indicates something more than functionality going on.

An English Heritage survey of English flint mines identified ten definite flint mines, seven of which are within the study area of this research, a further probable mine within the study area, and rejected fifty sites previously listed as flint mines within the then National Monuments Record (Barber *et al.*, 1999:74-80). Excavations have taken place at all ten of the definite mine sites located in Sussex, Hampshire, Wiltshire and Norfolk in the 19th and 20th centuries, however not all shafts have been excavated and, of those that have, some have only been partially investigated. Furthermore, only four of the mines have been excavated within the last thirty years, namely Harrow Hill (Holgate, 1995), Long Down (Holgate, 1995), Martin's Clump (Fowler, 1987 and 1992) and Stoke Down (Holgate and Butler, forthcoming). Human skeletal material from the southern British flint mines is very limited in quantity, providing little evidence for mines as locations for disposing of remains of the dead and the radiocarbon dates from these are in short supply, numbering around 20 from the South Downs (Healy, 2009:10; Barber *et al.*, 1999:81-82). There are both articulated and disarticulated skeletal remains from flint mines, some of which have been interpreted as deliberate depositions. Excavations at Cissbury flint mine recovered three articulated skeletons and two skull fragments (Russell, 2001). It is not certain whether these bodies were deliberately deposited within the mine shafts or if the demise of these individuals was accidental. Complete skeletons have often been viewed as accident victims, left where they fell for practical reasons (Barber *et al.*, 1999:62). Bodies and upper body parts have also been found in the vicinity of flint extraction sites in association with other cultural matter. The differential treatment of bodies and fragmentary bones has been cited as potentially illustrative of particular belief systems of groups of people visiting the extraction sites (Russell, 2001). Flint mines have often been regarded as male domains but an alternative view is that there would have been practical reasons for females being in the mines, such as their smaller stature being more suited to working in the confined spaces (Russell, 2001:240). At Cissbury the two female skeletons were found in graves in the basal levels of the mine shafts with no obvious care afforded them, whereas a male was found within the upper fill, in a defined grave, in a crouched position (Rolleston, 1878), which has led to discussion around the apparently differential treatment afforded to the two sexes (Russell, 2001:108). The small number of human remains in flint mines makes further analysis of depositional practices limited in potential but there does seem to be value in including these remains in considerations of Early Neolithic mortuary practice as a whole.

Non-monumental

Numerically, chambered tombs and enclosure ditches are the two most common Early Neolithic burial contexts, followed by earthen long barrows and flint mine shafts (Russell, 2001). There is increasing evidence, however, for non-monumental burial contexts which should be considered alongside the main types in order to obtain a complete picture of mortuary practice for this era. Flat graves and isolated finds are scattered through the record and their individuality is generally thought to result from factors such as antiquarian investigation, incidental discovery, modern building works and coastal erosion, although this is not necessarily the case (Schulting, 2009). It is clearly much harder to find patterns of burial practice for isolated examples but their analysis within the wider locale could reveal useful information. In 2008 at Yabsley in Blackwall, London, the skeleton of a probable young adult, possibly female, was found in a flat grave cut into the sand (Coles *et al.*, 2008) and dated to 4230-3975 cal BC. Within the area of this study, other single Neolithic burials have been found at Nethercourt Farm in Kent (Dunning, 1966), Yeoveney Lodge in Staines, Surrey

(Robertson-Mackay, 1987), and Pangbourne, Berkshire (Piggott, 1929). These indicate further variety in burial locations, broadly within this particular region.

Early Neolithic human remains have also been recovered from rivers and caves. In the case of river finds, issues clearly arise around identifying the original place and method of deposition and how they came to be in the river, however patterns can potentially be derived through distribution data. Analysis is only possible on these remains via craniometrics or direct dating (Schulting, 2009), an example of the latter being a skull from Battersea dated to 3940-3380 cal BC (Bradley and Gordon, 1988). Cave burials have received attention in recent years and direct dating programmes have shown them to be a 'significant feature' of earlier (and indeed later) Neolithic mortuary practice thus providing the opportunity to meaningfully compare these burials with other burial types from the era (Schulting, 2009). Radiocarbon dating indicates a dramatic increase in cave burials after around 3900 BC, at the same time chambered tomb and long barrow burials began to take place. It has been argued that cave burials were the ordinary ones and that those in the human-made monuments were special in some way but that, equally, caves' permanence within the existing landscape and underground could have afforded them special, mystical status over and above that of surface monuments (Chamberlain, 1996). In Yorkshire, a study of Early Neolithic human remains in caves and rock shelters has identified a variety of body treatment which, it is suggested, could either result from pragmatic concerns regarding the disposal of corpses or from deliberate, ritualistic mortuary rites (Leach, 2008). Further afield at Scaloria cave in Italy, the disarticulated remains of 24 Neolithic individuals have recently been found to have been deposited there as part of complex secondary burial rites (Robb *et al.*, 2015). It has been suggested that stalactites resemble human bones and that water dripping from them may have been seen as representing bodily fluids such as breast milk or semen and that caves therefore were places where bones completed the cycle of life and death (Robb *et al.* 2015:51).

Burial Practices

Along with a variety of burial locations in the Early Neolithic period, the archaeological record also demonstrates a diverse range of burial practices based around several prominent themes indicating particular preferences, but perhaps no single, over-arching belief system. Single burials are generally peculiar to southern England and bodies, whether as single, successive or collective burials, were usually placed in a 'crouched' position with occasional instances of a sitting position (Fowler, 2010:14), however the mortuary record contains significantly more disarticulated and fragmentary human remains for the period.

Excarnation and Disarticulation

Having discovered incomplete disarticulated human remains at Norton Bavant, Wiltshire, John Thurnam in the 19th century introduced the theory that human remains in long barrows were stored elsewhere before their final interment in the barrows (Thurnam, 1868). Over time this theory has been developed to argue that depositing bones in barrows may have been just one element of a more complex sequence of burial events (Kinnes, 1975:17), a form of secondary burial (Ashbee, 1966:62) and a means of demonstrating the dead as an undivided community (Shanks and Tilley, 1982) or an expression of the divisions between such things as maleness and femaleness, as summarised by Thomas (1996:136), who suggests that recognition of the importance of this sort of transformation is not dependent upon belief in a soul. A recent experimental archaeology project in Estonia carried out three different types of known prehistoric burial practices, using calf and pig cadavers, to investigate the technical and emotional aspects of each approach (Jonuks and Konsa, 2015). The different stages of decomposition evoked various emotions in the participants ranging from peacefulness, repulsion and neutrality, and the burial rites themselves were observed to impact in different ways due to visual and temporal factors during the transformation of the dead into a ritual object. Although the technical aspects of the practices can be related back to the Neolithic, the emotional ones, of course, can only really apply to our 21st century worldview.

It has been suggested that human bones would have been deposited relatively quickly in wooden mortuary chambers and then sealed by the construction of the barrow (Piggott, 1966:387) but also that pits beneath long barrows were temporary storage places for burials while the flesh decayed from the bones (Thorpe, 1984:47). It is estimated that under favourable conditions complete skeletonisation of buried human bone would take place within three-to-five years but this would be much shorter for exposed remains (Bass, 1997; Rodriguez, 1997; Simmons, 2002). Although the practice of excarnation before later interment in chambered tombs and long barrows has been much discussed, the evidence for this is slim. The most convincing records come from the early part of the Neolithic, although this is potentially only because it is more easily identifiable on causewayed enclosure sites than at the henges of the later Neolithic (Beckett and Robb, 2006:61). Brothwell and Blake (1966) highlighted this practice for the assemblage at Fussell's Lodge long barrow in Wiltshire, evidenced by the predominance of larger bones and absence of smaller ones. Recent re-analysis of Fussell's Lodge has been interpreted to demonstrate old disarticulated human remains being gathered up from elsewhere along with the remains of 'freshly dead' people from Fussell's Lodge, and placed together in a mortuary container there, subsequently reordered by date or group affiliations (Bayliss and Whittle, 2007:81). The remains at Haddenham in Cambridgeshire provide a convincing case for excarnation in the region (Wakely, 2006) and the evidence for canid chewing of human remains at Adelstrop barrow is also compelling (Smith, 2006). At Parc le Breos Cwm in South Wales extensive evidence has been found of gnawing resulting from exposure of human remains prior to deposition (Whittle and Wysocki, 1998).

At Hambledon Hill causewayed enclosure in Dorset the central enclosure has been interpreted as a massive excarnation site (Mercer, 1980) and there are cut marks on some of the human bones from there indicating the defleshing and cleaning of dead bodies, and gnawing marks consistent with dogs and foxes suggest that the location of the remains was accessible by scavengers over a period of time (Mercer and Healy, 2008:516). Further examples of gnawed disarticulated human remains have been found at the causewayed enclosure at Etton in Cambridgeshire (Pryor, 1998) where half of the 15 fragments were gnawed. There is compelling evidence that animal gnawing was more widespread in the Neolithic than previously thought but subsequent weathering and scavenger displacement of bones often makes it impossible to distinguish (Mercer and Healy, 2008:496).

There are other instances of likely prolonged access, for example at Fussell's Lodge where the mortuary container potentially allowed the living to have access to the remains for a time after which a burning event and subsequent erection of the barrow sealed-off the remains (Bayliss and Whittle, 2007:81). However, although excarnation by exposure has been shown to have taken place at some monuments like these, assemblages subject to recent reanalyses have shown very few other examples (Smith and Brickley, 2009:63) indicating that this practice was perhaps not that widespread.

Different anatomical elements have been found to predominate disarticulated human remains assemblages in causewayed enclosures and long barrows (Thorpe, 1984:83). At Fussell's Lodge, for instance, the arrangement of skulls and long bones and variation in occurrence of smaller bones appear to represent gradual disarticulation and deliberate reordering (Ashbee, 1966:62; Shanks and Tilley, 1982). Also, at Hazleton North, skulls were lined up around the edges of the chambers and passages (Saville, 1990:250). Skulls at Hambledon Hill causewayed enclosure were found to have cut marks indicative of defleshing (Mercer and Healy, 2008). Other disarticulated bones have been found in ditch fills, for example at Offham (Drewett, 1977). Mandibles were found separate from skulls at West Kennet long barrow along with other post-cranial bones, particularly long bones and vertebrae (Piggott, 1962:20-5). There are many examples of both 'partial deposition' and 'partial removal' in the Neolithic (Edmonds, 1993) indicating manipulation of skeletons, perhaps over time (Keiller and Piggott, 1938:130; Saville, 1990). There are modern day ethnographic examples of the exposure of human remains, for example at Trunyan in Bali (Figure 2.2), where the deceased are left in a community charnel ground to publicly decompose prior to being added to a communal bone pile (Rodrigues *et al.*, 2018). It is believed that this practice has been going on in Trunyan possibly for millennia despite the introduction of cremation elsewhere in Bali as the usual Hindu burial rite.

Figure 2.2 Community bone pile at Trunyan, Lake Batur, Bali (Photograph: Arfiana Rahma Shanti)

Fire/Cremation

Fire played a role in Early Neolithic mortuary practice, both as a potentially ritualistic method of 'closing' primary stage wooden mortuary structures within a barrow and also in terms of the burning of human remains. A review of Neolithic burials in south-east England (Kent, East and West Sussex and Surrey) found fewer than 50 burials, of which two thirds were cremations (Mays and Anderson, 1995:375). At Fussell's Lodge long barrow in Wiltshire some human and cattle bones were found to have been burnt, along with other material, which has been interpreted within the radiocarbon dating framework there as a transformative burning event at the closure of the primary mortuary deposit and construction of the subsequent earthen long barrow (Bayliss and Whittle, 2007:81). Evidence exists at some monuments for burning within chambers, for example at Hazleton North (Saville, 1990:104) and external 'ritual hearth' features occur on some sites, such as at Luckington where a hearth contained burnt animal bone (Corcoran, 1970:46) and Whitehawk causewayed enclosure where human bone was found in a hearth feature amongst animal bone and pottery sherds (Curwen, 1934:111).

Cremated bone has been found at a number of Early Neolithic monuments such as Hazelton North, where more than 200 cremated adult and sub-adult human bone fragments were recovered (Saville, 1990:104-106) and the Chestnuts tomb in Kent, excavated in 1957 and found to contain 3500 fragments which have been estimated to represent an MNI of nine adults and two possible infants (Alexander, 1961). A small amount of cremated bone has also been found at the Staines causewayed enclosure (Robertson-MacKay, 1987:51). Cremated remains are noted in a number of antiquarian records but little of this material was retained prior to the mid-20th century as it was not believed the remains were identifiable (McKinley, 1989:67). There is therefore a scarcity of cremated remains from the Early Neolithic available for study but, fortunately, some material has both survived and, in the case of Sales Lot for example (O'Neil, 1966; Smith and Brickley, 2006 and 2009), been subject to radiocarbon dating to confirm cremation as part of the suite of mortuary practices for this period. What is less clear is whether the deposition of cremated remains in Early Neolithic monuments was a selective rite and, if so, what the criteria for this were, or in what other places cremated remains were deposited and whether these would have left any archaeological trace, such as scattering them into rivers (Smith and Brickley, 2009:59) which obviously would have left none.

Cannibalism

Following his excavations at Whitehawk causewayed enclosure in the 1930s, Cecil Curwen interpreted skull fragments in a hearth/burnt feature there, mentioned above, as evidence of cannibalism. Since that time more techniques for the identification of potential cannibalism have been developed. Although there is limited evidence for cannibalism in Neolithic Europe (Villa *et al.*, 1986), it has been shown that osteoarchaeological evidence for consumption can be arrived at via the comparative analysis of faunal and human remains (White, 1992:339). The record shows that patterns of butchery should be similar in terms of frequency, location and type of cut marks (Knüsel and Outram, 2006:256), as was found in the remains at Gough's Cave, for example (Andrews and Fernandez-Jalvo, 2003). Evidence of cooking should, again, be similar for human and animal remains (Knüsel and Outram, 2006:27), however defleshing for ritual rather than consumptive purposes would likely result in different patterns (Villa *et al.*, 1986) and treatment of different parts of the skeleton has been interpreted as differentiating between ritualistic and consumptive motivations (Cole, 2010:5). Work has been carried out in recent years on categorising different types of burning and the identification of microscopic as well as macroscopic indicators has been developed, such as peri-mortem fractures, percussion, cut marks and burning and it is now felt that burnt human remains do not necessarily indicate marrow extraction, warranting an interpretation of cannibalism (White, 1992:156,350). A detailed methodology developed for identifying evidence of cannibalism in hominid remains (Cole, 2010) cites the identification of multiple criteria in order to reach a convincing interpretation. Further to osteoarchaeological identification of cannibalism, the wider question of the potential motivations for such a practice has been considered and explanations offered include temporal, circumstance-driven, demographic and spatial concerns (White, 1992:355).

In the British Neolithic, the remains of a dismembered body at Maiden Castle were argued to be an indicator of possible cannibalistic practice due to the lack of respect apparently shown to the individual concerned (Wheeler, 1943), however this was contested (Brothwell, 1971) and the remains were in fact eventually radiocarbon dated to AD645, within the Anglo-Saxon period, at odds with Mortimer Wheeler's original interpretation of the burial as a primary Neolithic one. More recently and further afield, the LBK site at Herxheim in Germany has been interpreted as demonstrating strong evidence for 'ritual activities in which cannibalism played an important part' on a very large scale (Boulestin *et al.*, 2009). This evidence takes the form of anomalies in the distribution of the human bones on the site, correlation to relative contents in food resources and associated variation in human-induced breakage, abundant defleshing and similarities with animal butchery, thus expanding previously identified methods for identification of cannibalism (Boulestin *et al.*, 2009:977). Another convincing reported case for cannibalism comes from Fontbregoua, a cave site in Provence, France (Villa *et al.*, 1986) where osteological analysis strongly suggests that humans there were butchered, processed and probably consumed in much the same way as animals, and the recent excavation of a causewayed enclosure site at Escalles, Pas-de-Calais in France, dated to 4000 cal BC, has thrown up another potential example (Praud, 2015). Here, some 2000 fragments of human remains have been recovered, estimated to represent a minimum number of individuals of nine adults and eight juveniles, and osteological analysis has found evidence of breakage of fresh bone, including skull fragments, and cut-marks indicative of defleshing and dismemberment along with exposure to fire in some cases. Two interpretations have been put forward by the excavators, one being secondary burial, as with contemporary practice in southern England at the time, while the other, currently favoured, explanation is that of cannibalism in line with other examples from the European Neolithic.

Looking back from our modern-day viewpoint, which acknowledges a greater complexity to the identification of cannibalism, the Whitehawk case now seems more tenuous, however consideration of the Whitehawk remains alongside other possible instances from Early Neolithic sites could be beneficial to furthering understanding of the existence or not of this practice.

Animals

The evidence for the deposition of animal remains in the Early Neolithic is less than for later periods. There are examples of heads and hooves in long barrows in southern Britain and these have been interpreted as representing the placement of a hide (Piggott, 1962) or, alternatively, from feasting which was commonplace in the Early-to-Middle Neolithic, especially in causewayed enclosures (Serjeantson, 2011:82). Cattle bones are often found in association with Early Neolithic burials, particularly in causewayed enclosures and the ditches of long barrows, either among the human remains or close by; these can be skulls or skull fragments or other bones such as metatarsals. At Whitehawk causewayed enclosure, for instance, the faunal reports over the three seasons of excavation in the 1920s/30s each describe abundant quantities of cattle bones (Ross Williamson, 1930; Curwen, 1934 and 1936). Causewayed enclosure assemblages also feature quantities of pig, sheep and goat bones, however long barrow assemblages almost entirely consist of cattle with no other species present, suggesting that a form of animal hierarchy existed in the Early Neolithic perhaps connected with a transformation of a social hierarchy at the time (Thorpe, 1984).

In the Early Neolithic period it has been posited that society was based around the circulation and deposition of several different materials including human remains, pottery and animal bones (Thomas, 1999:226). It has been argued that the inclusion of cattle bones within mortuary deposits reflects the importance of cattle and their role in the Neolithic way of life, in which they represented wealth and status, and that their inclusion in the mortuary deposits denotes equivalence (Thomas, 2003). At Fussell's Lodge the position of a cow skull in relation to the primary timber mortuary house structure has been interpreted as resulting from a cow hide covering the flint cairn and bovine foot bones found within the material over the cairn itself as indicating the involvement of cattle in the transformation between life and death (Bayliss and Whittle, 2007:81).

Following recent reanalysis of faunal remains at thirty-three chambered tombs and earthen long barrows in Britain, it has been suggested that Early Neolithic people could have had degrees of association with different animals ranging from close daily interaction with domesticated species to occasional encounters with wild species, and that the depositions in mortuary contexts reflect this differentiation. Furthermore, species which lived closely with humans may have been valued for this special connection while more distant species could have been seen as having mystical or spiritual properties (Bishop, 2013). At chambered tombs faunal depositions had a greater emphasis on closely associated species (83%) whereas at earthen long barrows, where human remains were less frequent in comparison, the faunal deposits were dominated by distantly related species (79%) which could be indicative of different purposes for the two types of monument (Bishop, 2013).

Grave goods

A number of artefacts are found in Early Neolithic burial contexts including flint and antler implements, pottery fragments and vessels, animal bones, stones, beads, shells and fossils. Artefacts are found within earthen long barrows in southern as well as northern Britain (Kinnes, 1992a:108-112) but more commonly they are deposited around mounds and, in southern Britain, mostly in ditches. Grave goods *per se*, that is, items deliberately placed with individual burials, are uncommon but there are a number of examples of long barrows with pottery and flints within pits under or in the mound or near burials and a handful of known cases where these were deposited with a particular burial. The emergence of grave goods over time perhaps indicates a move towards an emphasis on individual status in southern England (Thorpe, 1984 and 1996:161-181). It has been argued that the gradual introduction of single burials with grave goods were evolutionary elements of funerary practice over time, beginning early in the Neolithic period (Burgess and Shennan, 1976 cited by Thomas, 1991:151). Elsewhere, the grave of an Early Neolithic adult male individual in Avignon-la-Balance-Ilot P in southern France (Figure 2.3), partially excavated in the 1970s, was reassessed in 2009 and found to be sophisticatedly adorned with multiple red *Columbella rustica* shells, from the Mediterranean, and red deer canine teeth, indicating long-distance cultural relationships in Europe during the Neolithic (Zemour *et al.*, 2017). The significance and potential symbolism of the grave goods themselves has been discussed and it has been argued that identification of the origin of naturally-occurring artefacts, specifically stones, can reveal links to particular points in the landscape and meanings associated with their 'birth', use and deposition (Cummings, 2011:46).

Figure 2.3: Early Neolithic burial from La Balance-Ilot P, Avignon (Zemour *et al.*, 2017:55, figure 2)

Depositional practice in the Neolithic is not restricted to the burial of human and animal remains. Pit digging became widespread in the Early Neolithic and there is much variation in pit deposits encompassing both potentially ritualistic inclusions, such as human remains, and routinely deposited items such as pottery. There are examples of both ‘types’ of deposition together, such as in the pits at Nethercourt Farm in Ramsgate, Kent and at Pangbourne in Berkshire where human burials were accompanied by decorated Early Neolithic pots (Thomas, 1991:68). There is a complete ceramic sequence in south-east England now which the recent radiocarbon dating framework has greatly enhanced. It has been suggested that contemporaneous, contextual analysis of the pottery would enable greater understanding of the roles of different types and vessels, for example what comprised the ‘death’ assemblage (Barclay, 2008:3) and further work in this area would clearly help to illuminate the existing Early Neolithic record.

At Whitehawk an almost complete articulated roe deer skeleton was found buried in a pit, huddled on its back and partially dismembered (Curwen, 1934:127). Roe deer deposits were also found at the Coneybury ‘Anomaly’ in Wiltshire and these have been interpreted as an example of totemism, perhaps because such species were seen as taboo, symbolising interrelationships between groups as part of increasingly complicated worldviews at that time (Reynolds, 2011:171), or differentiation from cattle on the basis of pragmatism or belief (Gron *et al*., 2018).

Studies of the transition to the Neolithic way of life have in recent years had the benefit of stable isotope analysis. This has demonstrated a surprisingly rapid move from a marine-based diet in the Mesolithic to a terrestrial one based on domesticated plants and animals in the Early Neolithic. This has prompted much discussion about the reasons behind this change (e.g. Thomas, 2003; Richards and Schulting, 2006) or indeed whether this revolutionary change actually even took place at all (Milner *et al.*, 2004). Although the corpus of earlier Neolithic isotope data is relatively small at the present time, the trend is a consistent one, pointing towards the enthusiastic adoption of animal herding in contrast to a more relaxed move towards agriculture and sedentism, contrary to the long-held view of Mesolithic to Neolithic transition (Smith and Brickley, 2009:114). On a more specific level, isotope analysis has been used to consider specific groups and demographic breakdowns within them and some evidence exists to indicate more animal protein in the male diet than the female one during the Early Neolithic in the Wessex/Cotswold-Severn region (Smith and Brickley, 2009:116). Although it is at an early stage, isotopic evidence for Neolithic lifeways would appear to hold much promise for furthering our understanding.

Interpretations

The study of Early Neolithic archaeology really began in the 17th-to-19th centuries and the standards of the time were far removed from those used in our modern-day discipline. This has resulted in an archaeological record with limitations both in terms of surviving content and interpretation but one that nonetheless forms the basis of any current study, not least due to the lack of investigation of Early Neolithic sites in modern times.

> 'Mortuary archaeology has always been studied within some particular conceptual framework' (Thomas, 1999:126)

In archaeology's culture historic period, the focus of Neolithic scholars was on cultural origins through the study of material traits and the construction of 'grand schemes' (Corcoran 1973; Daniel 1958; Chapman *et al.*, 1981:3, cited by Thomas, 1999:126). The subsequent period of processual archaeology saw a theoretical move to territoriality and labour investment, for example Renfrew's work on territorial divisions in barrow and enclosure distribution (Renfrew, 1973), as opposed to belief-based motivations (Binford, 1964 and 1965; Flannery, 1968 and 1972). It was believed that mortuary practice was a means of communicating information about the deceased, such as status for instance, to the living within the wider context of the community (Saxe, 1970; Binford, 1971). In the subsequent post-processual era, the theoretical standpoint was that the remains of the dead were utilised to represent particular things about society, not necessarily accurately but ideologically, as typified by Shanks and Tilley's (1982) Marxist archaeological interpretation of the ordered skeletal remains at Fussell's Lodge. As time has gone on it has been recognised that there is much variability within and between monumental skeletal assemblages (Thorpe, 1984; Thomas and Whittle, 1986; Thomas, 1988).

There are accounts dating back even as far as the 16th century of human remains being found in prehistoric monuments, with varying degrees of recording and interpretation of these. In the early 20th century cultural historic period an emphasis on monument typology led to a lack of interest in human remains and, although in the second half of the century archaeological recording became generally more thorough and professional, the human remains reports were brief with little interpretation (Smith and Brickley, 2009:37) until really the 1970s and 1980s post-processual era when mortuary practice became viewed as a means of understanding the social processes of the past, for example Brothwell's (1972) work on palaeodemography. It is only over the past four decades that death has been studied in its social context and in addition to age, gender and health, issues such as identity, ancestors, symbolism, cosmology, social landscapes and emotion are now at the forefront of mortuary archaeology (Chapman, 2003).

In the modern period it has been argued that tombs were foci for ancestor rituals which characterised a desire in the Early Neolithic period in Britain to have ongoing access to the remains of the deceased (Barrett, 1994:52) and that communities lived a season-driven, mobile lifestyle based around a number of ritualistic practices that structured their world (Edmonds, 1997; Thomas, 1991:185; Thomas 1999:659). In southern England specifically it has been proposed that the Neolithic dwelling-scape of monuments and within it the deposition of human remains and other artefacts was based around the changing seasonal vegetation of the landscape and its effect on visibility (King, 2001:333). It has been argued that the chambers of megalithic tombs were in effect human-made caves, reflecting those below-ground and constructed in particular locations within the landscape of the Neolithic cosmos, epitomising the reality and closeness of the dead (Lewis-Williams and Pearce, 2005:195). Conversely, the possibility of settlement sites being chosen due to their accessibility rather than any other factor in the mostly wooded environment in existence at the time has been cited (King, 2001:333; Brown, 1997:138 and 142; Clapham *et al.*, 1997:269). Charcoal and molluscan evidence (pollen is seldom preserved on chalk uplands) indicates that most causewayed enclosures on high ground probably started out in small clearings and Early Neolithic monuments generally may have been peripheral to the principal areas of everyday activity (Oswald *et al.*, 2001:104,119).

The deposition of human bodies as well as material artefacts has been argued to represent transformation via particular practices at causewayed enclosures and long barrows, reminding the living of their place in the world and their connections with the dead. Bodies, it is suggested, cannot be separated from the rest of the material world and should be interpreted both as material and conceptual entities (Fowler, 2008:13). It is, however, argued that the body itself is the dominant symbolic focus due to the power and emotion associated with it (Hodder, 2007).

Bringing together bodily remains, deposition and the construction of monuments in the Neolithic could be connected (Fowler, 2010:10) and it has been proposed that the advent of monumentality in the Early Neolithic in southern Britain may have either been a product of the dominant social groups in the region, or may have appeared more gradually in line with people's changing self-consciousness and awareness of their place in their world (Whittle *et al.*, 2011). There may well have been other places within the Early Neolithic landscape that were considered equally important as the monumental structures but not used as the final resting place for human remains (King, 2001:326).

The role of memory in Early Neolithic mortuary practice has been discussed and it has been highlighted that new radiocarbon dating frameworks call into question previous interpretations that linked new practices and worldviews with emerging monuments, such as the long barrows of southern England. Instead, within the more precise chronologies now available, it is argued that Early Neolithic people were attached to particular places based on their personal memories and knowledge of more distant pasts. For example, Ascott-under-Wychwood overlies an earlier occupation site and radiocarbon dating shows that the construction and deposition of relatively few people's remains there were undertaken quite rapidly over perhaps three-to-five generations (Whittle, 2010:39-42). It has been argued that dramatic mortuary events, burying the dead beneath the ground, and the continuing presence of monumental structures would have effectively controlled both the dead and the living by management of secrecy (Jones, 2005; 2010:117-118).

A phenomenological approach has been taken to trying to understand personhood in prehistory and the potential experiences of people in relation to the landscape and monuments around them (e.g. Tilley, 2008; Bruck, 2005; Brophy, 1999; Cummings, 2002). A recent example of applying phenomenology to analysis of mortuary practice is a project using three-dimensional modelling at the Knowth passage tomb in Ireland to consider the impact on the people involved in its construction process (Meegan, 2014:159). It has been argued that the locations where monuments were built were more important than the precise architecture of the monuments themselves, which represented 'fragments of memory' (Cummings, 2003).

Temporality

The introduction of earlier Neolithic innovations and their commensurate social changes would, it has been argued previously, have taken place gradually over several centuries (e.g. Thomas, 1991) and relative dating sequences based on artefact typology contemporaneously linked causewayed enclosures to long barrows and flint mines (Oswald *et al.*, 2001:32). Reviews of the Neolithic in the south-east counties of Kent, Surrey and Sussex have been conducted in recent years (Champion, 2007; Cotton, 2004; Garwood, 2003:56-7) and, crucially, a large bank of new radiocarbon dates have been established as part of the *Gathering Time* project (Whittle *et al.*, 2011), providing a robust regional framework within which to now consider chronology and specific elements of the Early Neolithic in more detail (Figure 2.4). In southern England, from around the 41st century cal BC, the earliest Neolithic was already in place in the south-east. Causewayed enclosures began to appear in the late 38th century cal BC, peaking in the following two centuries; these were preceded by long barrows and long cairns. The life spans of causewayed enclosures varied with some stretching into the 34th or 33rd centuries cal BC, however cursus monuments began to arrive in the 36th century cal BC and over the next couple of centuries there were several monument types in use at the same time (Whittle *et al.*, 2011: 2).

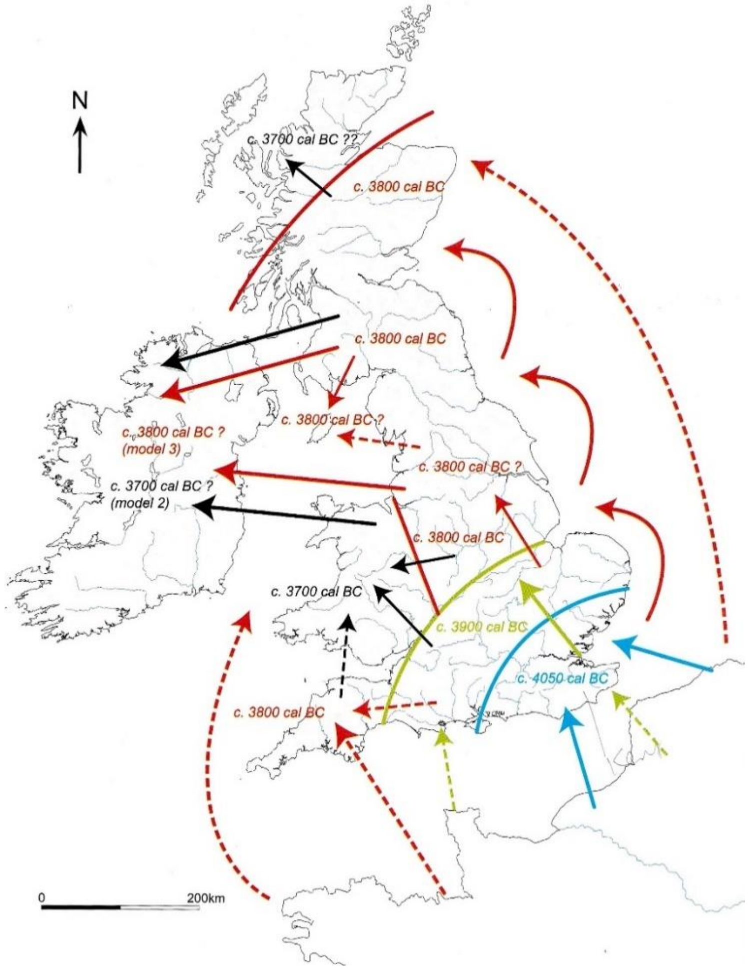


Figure 2.4: Interpretive map of suggested dates, source areas and directions in the spread of Neolithic things and practices across Britain and Ireland (Whittle *et al.*, 2011: 896, figure 15.8)

Research into the expansion of farming into Britain during the Mesolithic-Neolithic transition using pollen analysis (Woodbridge *et al.*, 2014) and the new radiocarbon dating chronology (Whittle *et al.*, 2011) has revealed patterns of 'boom and bust' during the Early Neolithic which align with dates of monument construction and use and evidence for interpersonal violence. From this, it has been argued that Neolithic practices and culture were introduced by colonising groups of farmers from continental Europe in the two or three-hundred years after 4100 BC, perhaps prompted by population pressure (Shennan, 2018:189).

The mortuary practice of the preceding Mesolithic period has received more attention in recent years and it is now understood that this was the time when people first began to disarticulate their dead in Britain, at the same time using caves as monuments to interact with the remains of their ancestors, indicating a certain degree of continuity of practice into the Early Neolithic period (Hellewell and Milner, 2011). Contrary to the situation in continental Europe where articulated burials in Mesolithic cemeteries is the norm, there are currently only four known articulated burials for the British Mesolithic, along with two cremations and a further 22 disarticulated deposits (Cobb and Gray-Jones, 2018:371). It has been argued that disarticulated human bones found on the archetypal Mesolithic shell middens represent an earlier practice of exposure and body manipulation and that the middens provided inspiration for monument construction in the Early Neolithic (Pollard, 1996; Cummings, 2003); further evidence being the similarity in alteration of the landscape resulting from the permanence of shell middens, the deposition of material culture and the practice of feasting (Cummings, 2007:494).

It has been suggested that the temporality of use of Early Neolithic monuments would have been periodic and sporadic in line with the movements of people throughout their landscape on a 'momentary, daily, seasonal, annual or once-in-a-lifetime' basis (Kirk, 2006:344; Edmonds, 1993;1999). Against this background, individual sites can potentially reveal their own chronologies set within the bigger picture, for example at Whitehawk causewayed enclosure in Sussex it has been postulated that the external bank of one of the ditches there could incorporate a pre-existing long barrow (RCHME, 1995). Further research is required to answer this type of question and recent dating has already provided a more detailed chronology for other sites, such as at the causewayed enclosure Abingdon in Oxfordshire where it has been shown that the two circuits were built within a few years of each other, perhaps built for the same reason (Whittle *et al.*, 2011:419,918). Analysis of the depositional patterns of these two circuits could provide interesting and valuable insights into relationships between them over time and space and any further excavation could, of course, provide more relevant data.

Radiocarbon dating has begun to identify deposition sequences in Early Neolithic monumental structures, facilitating an understanding of different practices and their relationship to the construction and use phases and spatiality of a site, and in long barrows with their mortuary function, for example at Wayland's Smithy long barrow in Oxfordshire, where there are now 24 radiocarbon dates in existence (Bayliss and Whittle, 2007). At Fussell's Lodge the primary phase is estimated to have lasted for four-to-six generations; shorter periods of use are indicated for other sites, such as West Kennet long barrow in Wiltshire which is estimated to have been accessible for only one or two generations, and endings seem to vary from potential 'closure rites' to simple discontinuation of use, demonstrating much variety (Bayliss and Whittle, 2007:131,141). Even absolute dating chronologies cannot be entirely thorough and conclusive, however, as they are based on the available samples and subject to the limitations of the archive.

From modelling of the Wayland's Smithy radiocarbon dates it is thought likely that an initial wooden mortuary structure was built there in the 36th century cal BC, in use and accessible for perhaps a generation, then left for 40-to-100 years, and then closed by the construction of a long mound in around 3520-3470 cal BC which, in turn, after another gap of 1-to-35 years, was succeeded by a chambered mound on the same alignment between 3460-3400 cal BC, its period of use likely extending into the mid-34th century cal BC. Human remains were successively deposited into the mortuary area although the exact sequence is unfortunately confused by the complex stratigraphy and earlier disturbance (Bayliss and Whittle, 2007:103). It has been demonstrated that in flint mines both temporal and spatial variability exists in terms of regions, mines and shafts (Wheeler, 2008:155). Overall, the mortuary practices of the period are many and varied, often contemporaneously so within and across frequently small regions, and therefore they benefit from analysis as part of the wider picture rather than in isolation (Beckett and Robb, 2006:69).

Demography

The study of demography in the Neolithic centres around the age and sex of members of the population, which can be a relatively small one focussed on a particular assemblage or dataset such as the one in this research. However, demography can be researched at a broader level, focussing on the reconstruction of regional patterns, such as the recent large-scale study of cultural evolution in Neolithic Europe (Shennan, 2018) which has found that demographic booms and busts characterised the Neolithic period here, including in Britain, and clearly has implications for our broader understanding of the period and the composition of the populations who inhabited it.

Osteological analysis concerns the biological sex of skeletal remains and evidence for gendered identities in the Neolithic comes almost exclusively from the burial record in conjunction with the material culture of the period and, as such, is limited in its ability to illuminate the identities and statuses of people during life (Edwards and Pope, 2013:473). In the culture-historic era of the 1920s to the 1950s archaeologists were concerned with origins rather than individuality (e.g. Corcoran 1973; Daniel, 1958) and in the era of processual archaeology that followed, territoriality, chiefdoms and leaders took precedence (e.g. Chapman *et al*., 1981; Renfrew, 1973:76). It was not until the move to post-processualism in the 1980s that prehistoric individuality became more prominent (Whittle, 2003:51; Schulting, 2009:1; Shanks and Tilley, 1982; Hodder, 1986). The study of gender in prehistory has been hampered not just by the limits of the archaeological record and theoretical trends over the years but also by the assumptions of those making the interpretations (Edwards and Pope, 2013:461), usually biased towards the male. For example, after the revised identification of a skeleton at the Cissbury flint mine as female its unusualness seems to have been ignored (Russell, 2001:182). Even the post-processual era has been largely negligent towards gender, instead concentrating on 'personhood' and not attempting to identify the roles of men and women in prehistory (Edwards and Pope, 2013:462). However, in recent years the issue of gender has started to become more prominent. Osteological studies have considered evidence for different activities such as musculoskeletal stress markers (Wysocki and Whittle, 2000), squatting facets (Boulle, 2001) and ethnographic evidence for gendered public posture (Weiner, 1991) and burial position (Whittle, 2003).

Recent analyses of Early Neolithic skeletal assemblages have, however, highlighted the difficulty in accurately aging and sexing the remains and a resultant potential underestimation of the original number of remains interred (Smith and Brickley, 2009:75). It seems therefore that to identify valid demographic patterns depends upon comparison of the assemblages from multiple sites. Both male and female remains are found in Early Neolithic mortuary contexts and similarly both adult and child remains appear. There are however some general demographic patterns observable as well as some that have been identified for specific assemblages. It has been found that juvenile remains are fewer in number than adult ones in chambered tombs (Brothwell, 1971:177). Articulated remains in long barrows are three times more likely to be adult male than female, although this could be partly due to articulated burials being the most recent interments (Thorpe, 1984 and 1986; Schulting, 2009). Of the skeletal assemblage at the Hazleton North tomb in Gloucestershire, for example, 34% were found to be aged younger than five years of age at death (Rogers, 1990:183). It is pointed out, however, that despite children being fewer in number they appear in most Early Neolithic burial contexts and evidence suggests that children as young as five or six years of age may have been treated as 'future adults' in burial rituals (Whittle, 1996 and 2003). At Fussell's Lodge long barrow the human remains comprise both sexes and old and young age groups but demonstrate spatial arrangement by age and sex. Recent re-analysis has revised down the original MNI estimate from 53-57 to 34, comprising 26 adults and eight children/adolescents (Bayliss and Whittle, 2007:67). This equates to 76% adults and 24% children and adolescents, demonstrating a clear proportional bias towards adult remains in this case. This also highlights the importance of reassessment of assemblages using modern techniques. Two groups of female bones at Fussell's Lodge had apparently been rearranged to appear as two reconstituted individuals and these were found in association with an ox skull, interpreted as an expression of order, balance, transformation and growth in society (Whittle, 2003:34). Further examples of reconstituted skeletons in similar contexts exist at Penywyrlod and Pipton in South Wales, indicating a pattern of behaviour rather than a one-off act (Whittle, 2003:34).

The human remains from the Coldrum burial chamber in Kent have recently been reassessed (Wysocki *et al.*, 2013) and the disarticulated nature of the assemblage highlights the difficulties inherent in studying such fragmented remains, in this case an assemblage excavated by two different people over several years in the early 20th century. Of the remains it has been possible to identify anatomically, an MNI of around 17 has been arrived at, revising downwards the original figure of 22 (Keith, 1913). Of the 17, the figures indicate that 53% (n.9) are adults, of which 56% (n.5) are probably male and 44% (n.4) probably female. The immature individuals comprise two older juveniles aged 16-20 years and four older children, including one aged around five years and one around 24-30 months. An additional MNI of 11 has been arrived at for the later excavated fragmentary cranial and hand and foot bones (Wysocki *et al.*, 2013) and of the identifiable remains this equates to 55% (n.6) possibly male and 18% (n.2) possibly female, including one probable sub-adult aged 12-16 years and a possible younger child. There is, however, potential overlap between the two assemblages resulting from contextual complexity. Clearly the imperfect nature of such assemblages has implications for statistical analysis and it is important to work around this to provide meaningful analysis. A recent reassessment of the human remains for Early Neolithic long barrows in Britain has revealed no obvious single qualification for burial in these barrows and much variety from community to community with multiple potential factors for their selection, including age (Smith and Brickley, 2009:87).

The demography of the human remains from primary deposits at the West Kennet long barrow in Wiltshire has recently been reassessed in the light of new radiocarbon dates (Bayliss and Whittle, 2007:87). The original estimated MNI was 43 (Piggott, 1962:24; Wells, 1962:80) but again, as with Coldrum, this figure has been reduced in the recent reassessment via modern methods of analysis, in this case to 35. The remains were split between five chambers containing various combinations of men, women and children with the overall proportion of males being 56% and females 44%, with adults 75% compared to 25% for children.

Ethnographic evidence has been used to argue that bone relates to the male ancestral line whereas flesh and blood trace ancestry along the female line (Bloch, 1982; Carsten, 2004:88-91) and this highlights a move in recent years to the reconsideration of gender in prehistoric mortuary practice analysis. It has been suggested that women were seen as at least equal to men up until the transition from a foraging to farming way of life during the Neolithic period, likely when animal husbandry took over from cereal production and the activities involved favoured men physically, largely due to women's role as child bearers, which changed gender roles in society as a whole (Ehrenberg, 1989:105). Importantly, Ehrenberg highlights a historical propensity to consider evidence on the basis of preferred interpretative frameworks which has traditionally led to many accounts of men in prehistory but far fewer on the role of women, a view that is echoed by Bruck (2001) who points out that power in the Neolithic is implicitly seen as male. It has been argued that in reality all people would have had more than one social identity based on their place in their family, their occupation, and so on, and their status would therefore have been variable depending on the context (Bender, 1998). Similarly, identity may have been a binary concept based on private and public perceptions and how a person or group was perceived by others with the public version determining treatment in mortuary practice (Reiter, 2014). Within a Neolithic society in which conflict between different groups was common, it has been argued that women would have been central to a matrilocal residential system of unilinear descent; they would, for instance, have made the pottery that was introduced to the Neolithic way of life while men continued older soapstone traditions, as was found to be the case for the Stallings culture in south-east America (Sassaman, 2000:149).

A genome study of the two largest migrations in recent European history suggests these were driven by different cultural processes (Goldberg *et al.*, 2017). Migration from Analtolia was found to lack evidence of any sex-bias despite a move to patrilocality associated with the spread of farming. Conversely, significant male-biased migration was found from the Steppe Pontic-Caspian in the Late Neolithic/Early Bronze Age. It is interesting to note the absence of sex-bias in the earlier migration associated with agriculture compared to the later, male-biased one, which has been interpreted as possibly connected to new technology and conquests (Goldberg *et al*., 2017).

A recent study of two contemporary hunter-gatherer tribes has found that both men and women tend to have equal influence on where their group lives and with whom they live. This, it is argued, indicates that gender equality has been the normal situation for most of our evolutionary history, only changing with the advent of agriculture (Dyble *et al.*, 2015). The accumulation of resources and ability of men to have more children than women via multiple female partners are also proffered as explanations for inequality between the sexes. To this could be added the biological necessity for women to do the child bearing.

Some causewayed enclosures have been found to contain large numbers of human remains but these are special cases and usually their numbers are far fewer (Schulting, 2009). At the Hambledon Hill complex in Dorset human remains were recovered from two causewayed enclosures, two long barrows and various pits, demonstrating a range of mortuary practices and comprising 40 adults and 35 children. Of the 12 skulls deposited there, seven were sexed as female, five of these sub-adults (Mercer and Healy, 2008; Figure 2.5 below). The sex and gender of human remains within earthen long barrows in Wessex and South Wales has been subject to recent analysis and demonstrates the selection of males for interment in these monuments, however it is cautioned that interpretation of this pattern should consider differential identities rather than simply 'status' (Edwards and Pope, 2013:464).

Figure 2.5: Skull of sub-adult individual in the main enclosure at Hambledon Hill (Mercer and Healy, 2008:64, figure 3.12)

Musculoskeletal stress markers on adult bones can be used to indicate possible patterns of difference in lifestyle and at West Kennet long barrow, for example, male skeletal remains have shown more strenuous use of right arms, shoulders and legs than for the equivalent bones in females (Wysocki and Whittle, 2000). Similarly, tibial retroversion and lateral squatting facets are mentioned in the archaeological record, for example in the reports of the Whitehawk excavations (Tildesley, 1934:125), as evidence of habitual squatting resulting from particular activities in life. A study of more than 500 tibiae from France and America from the first century AD onwards identified a means of identifying both the stage of life squatting becomes habitual and the regularity of it being undertaken (Boulle, 2001), however, there is a lack of any meaningful data available on demographic patterns for this (Whittle, 2003:29). Ethnographic studies have demonstrated differences in public posture between men and women (Weiner, 1991:156) and Whittle has subsequently pondered whether this could be a factor in burial position (Whittle, 2003:29). Human remains from burials recovered during the recent excavations at the Neolithic variscite mines at Gava in Spain (Borrell *et al.*, 2015:87) have been found to show evidence for musculoskeletal stress markers indicative of repeated manual labour. Indicators include well-developed muscle insertions on one side of the upper limbs more than the other and those in the upper limbs being more developed than in the lower limbs. It is noted by the excavators that this osteological evidence is very similar to that found at the Bronze Age salt mines in Hallstatt (Borrell *et al.*, 2015; Pany, 2005; Pany and Teschler-Nicola, 2006). The osteoarchaeological evidence at Gava when considered alongside the data from the excavations as a whole has been interpreted as demonstrating that mining activities were undertaken there over a prolonged period of time by both men and women.

Osteoarchaeological evidence has previously found interpersonal violence in the British Neolithic to be more prevalent in male human remains than female (Schulting, 1998), however further recent analysis has found a more equal split between the genders and this pattern continues when considering both lethal and non-lethal violence (Schulting and Wysocki, 2005). Evidence for violence and trauma on skeletal remains in the form of cut marks and healed and unhealed wounds has been found at a number of Early Neolithic sites, such as Hambledon Hill (Mercer and Healy, 2008) and Fussell's Lodge (Brothwell and Blake, 1966; Ashbee, 1966; Wysocki *et al.*, 2007). There are also references to a decapitated head, evidenced by cut marks, in the causewayed enclosure ditch at Staines which was felt to have been deposited in a fleshed state (Codry-Collins, 2001; Proulx, 2001). In mainland Europe, it has been argued that collective violence was common in the Early Neolithic and that war-like tendencies seem more important in societies with social inequalities (Beyneix, 2012:215). The mass grave at Talheim contained 16 adults comprising nine male and seven female, and 16 children and adolescents. These remains have been interpreted as those of at least two families and clearly indicate equal treatment regardless of age or sex (Alt *et al.*, 1995). The skeletal assemblage from Wayland's Smithy I long mound is dated to the period when causewayed enclosures appear in the area (Barclay, 2006), thought to be a time of tensions and competition. The remains are predominantly male and evidence of violence has been found on three of the MNI of fourteen individuals with signs of canid scavenging indicating exposure for a period of time. Unlike Talheim however, the skeletal remains were deposited in an organised fashion and the mortuary structure itself was built with care (Bayliss and Whittle, 2007:118). In prehistoric southern Britain overall it has been found that warfare was mostly a male activity, although not exclusively the domain of young men, and from the Early Neolithic onwards the evidence from female skeletal remains indicate involvement by both sexes (Thorpe, 2006:158). Investigations into violence in the Neolithic have progressed in recent years and further research is now indicated both overall and comparably between monumental and non-monumental burial contexts (Schulting, 2012:247).

It has been argued that violence in the Neolithic was connected to environmental and population pressures and social changes, the evidence for this coming from a variety of sources including graphic depictions, material culture and settlement remains as well as skeletal remains (Schulting, 2006:224). It is cautioned however that the difference between accidental or non-traumatic disease processes (and even anatomical variations) and intentional violent trauma can be difficult to establish (Carman, 1997).

The removal of skulls in the Early Neolithic is regularly described in reports and is often assumed to have occurred post-mortem. However, modern techniques make it possible to interpret peri-mortem removal in some cases, although different methods can result in different conclusions, and care should be taken to ensure that the cut marks correspond to specific ligaments or muscle insertion points (Smith and Brickley, 2009:21).

Variability in prehistoric human remains is now known to be due to a number of factors pre- and post-deposition, both related to human activity and natural processes (Bello and Andrews, 2006:14). Making inferences from skeletal elements alone in Neolithic assemblages could be problematic as decay is non-uniform for different body parts and it is suggested that accurate studies should use broad-based approaches incorporating taphonomic analysis (Beckett and Robb, 2006:69). The small numbers of burials within Neolithic tombs has traditionally been explained as a consequence of such burials being special in some way, however, one study of a tomb in Orkney has recently found that taphonomic and sequential deposition processes can cause significant decay to human remains. Ethnographic and excavation evidence along with computer modelling was used in conjunction with this to argue that decay can be held responsible for the small numbers of remains recovered and that tomb burial was actually the norm rather than reserved for the special burial treatment of selected members of society (Crozier, 2014). As this analysis was based on the evidence from a single site, although it provides a useful model for considering the effect of taphonomic processes on the survival of human remains in certain burial settings, further studies would be required to test these findings.

A recent study of the preservation of human remains over time found them to be affected by age (and possibly also sex) and argue that this can account for an under-representation of infants in collective burials (Bello and Andrews, 2006). It is cautioned that demographic analysis of human remains can be adversely affected by a number of factors including taphonomy, which can create bias both in relation to deposition and over time when they are subsequently found and recovered (Chamberlain, 2006:12). Overall, it seems important to keep an open mind about the reasons for the limited numbers of burials in some contexts and to consider that there may be more than one explanation, generalisation not necessarily being possible or indeed advisable.

The study of children in prehistory, particularly in relation to daily life, has recently become more of interest to researchers, having been largely neglected previously (Harris, 2011:122). Study of burial practice relating to juveniles and, for example, their association with certain types of grave goods can give important clues to the way they were viewed by society. As well as being affected by potential issues of preservation, however, the study of sub-adults in the prehistoric archaeological record should also be set against an appreciation of different views about life courses and what constitutes childhood in different societies across time and space. Evidence from burial practice can give valuable evidence for this in the form of where and how juvenile individuals were buried and any patterns in the choice and inclusion of grave goods, compared to the treatment of adult individuals. In Neolithic Catalhöyük, for example, burials in domestic settings were largely restricted to infants and young children (Murphy and Le Roy, 2017), demonstrating a clear differential rite, whereas two Middle Neolithic infants in France were buried with adult artefacts, suggesting similar treatment to adults in death, perhaps that they were viewed as 'potential adults' (Le Roy, 2017). Analysis of grave goods has been used to illuminate the end of childhood, for example the inclusion of grave goods with adolescent burials in the Sintashta culture of Russia has been interpreted as indicative of childhood ending around the age of fourteen (Berseneva, 2017).

It has been suggested that childhood mortality would have been a regular part of life in prehistory, as it is in less developed areas of the world today, and that the impact of this should be taken into account when considering mortuary practice both in terms of burial and grave visualisation (Waterman and Thomas, 2011). The archaeological record demonstrates proportionally more children at causewayed enclosures compared to long barrows and chambered tombs (Thorpe, 1984;1986) however the proportion of adults and children overall does not necessarily reflect what the living population may have been (Schulting, 2009) and this could indicate choices made by communities regarding differential treatment. Demographic modelling provides a method of identifying patterns in mortuary populations. In the case of children, who are often elusive in the archaeological record, modelling based on high infant and childhood mortality rates of past populations suggests that children probably made up at least a third of the living populations (Chamberlain, 2006:178). A recent study of burials in megalithic monuments in northern Spain dated to between 3700 and 1500 cal BC utilised estimation of mortality rates and sex ratios compared with population models to identify possible demographic anomalies and found evidence of selective burial including an over-representation of children (Fernandez-Crespo and de-la-Rua, 2014).

At Neolithic enclosures there is often a predominance and differential treatment of child burials. At Windmill Hill, for example, both of the ditch burials were of infants and the only skeleton from Maiden Castle was also an infant. At Hambledon Hill, immature skeletons comprised 30% of the articulated burials, 16% of the skulls and 54% of the disarticulated (Mercer and Healy, 2008). In the main enclosure ditch two children aged 5-12 years were found buried in adjacent parts. They were the only articulated burials from the main enclosure and, significantly, although radiocarbon dating has shown they were buried 160-250 years apart, they were both similarly covered with flints and deposited with artefacts, and both have been found to have suffered from craniosynostosis, the premature fusing of their skulls. This condition is rare in the modern world and can be genetic which could suggest that the two buried children were related; their treatment in death has prompted consideration of the role of emotion within studies of memory and agency in Early Neolithic mortuary practice (Harris, 2010). The skeletal assemblage at Windmill Hill is dominated by children and sub-adults and it has been suggested that the probable preferentially-allocated location of their remains in the outer circuit is indicative of the dead having a place in the 'wider scheme of things' after their demise (Whittle *et al.*, 1999; Whittle, 2003:160).

A study of monumental cemeteries in Western Europe between 4600-4300 cal BC found very young children to be mostly excluded though some toddlers were buried with the same hunting artefacts as adult males, and some children were buried with adults in long barrows. Overall in the study group, age was not found to be a factor that determined who was buried in barrows. Significantly, it appears that individual cemeteries had their own burial practices rather than there being an all-encompassing set of rules (Thomas *et al.*, 2011). In the late 1990s a study of cave burials identified more than 256 Neolithic burials in Britain, directly dated or relatively dated by association with Neolithic artefacts. Of these, 39% were children which was proportionally higher than for children buried in long barrows at 25% (Chamberlain, 1996). At Hazleton North around 34% of the tomb population were aged less than five years of age and at West Kennet long barrow the proportion was very similar at 30% (Wells, 1962).

Ancient DNA studies have begun to add valuable insights to our understanding of the genetic make-up of individuals in the past in broader patterns of kinship and social organisation. For example, a study of four groups of multiple burials in Eulau, Germany, dated to the late Central European Neolithic, used aDNA in conjunction with strontium isotope and osteological analysis. The aDNA analysis identified genetic kinship among the group including a direct child-parent relationship in one case and this, combined with strontium isotope analysis indicating different geographical origins for the male and female sexes, has been interpreted as an exogamous and patrilocal society (Haak *et* *al.*, 2008). This demonstrates the great potential for the use of aDNA analysis in studies of the Neolithic, as with other prehistoric eras, and also the value of the application of multifactorial studies. An Early Neolithic example of the use of aDNA analysis is based on a Spanish mortuary cave in Cogolls, Catalonia, which indicates probable significant heterogeneity in the male individuals and different histories for the two sexes with inherent implications for dissemination (Lacan *et al.*, 2011). Furthermore, and particularly relevant to this research, another recent aDNA study has revealed strong evidence for the introduction of agriculture in the Early Neolithic period by incoming continental farmers from Anatolia via north-western mainland Europe (Brace *et al.*, 2018). The study included aDNA analysis of samples from several of the sites in the current research, namely Eton rowing course, Coldrum, Cissbury and Whitehawk.

Another recent addition to the field of osteoarchaeology is that of archaeothanatology: the study of biological and social components of death within the archaeological record (Boulestin and Duday, 2005; Duday, 2009). This method of analysis can be applied to archival records as well as burials *in situ*, utilising photographs and drawings of inhumations and their burial contexts. For example, a Middle Neolithic burial from Berriac, near Carcassonne in France, was found in what had previously been a grain storage pit. It was possible to ascertain from the position of the skeleton and its individual elements that it had been buried in a void, probably with a wooden lid originally. Over time, due to decomposition processes and gravity, the head had fallen forwards, displacing the mandible, axis and atlas (Duday, 2009:25). Without the benefit of understanding the effects of natural processes in this particular environment over time the interpretation of the burial position - specifically the head - could have been a different one. The usefulness of archaeothanatology in the analysis of archival records clearly depends upon the data available but in cases where reliable, detailed visual records exist there would seem to be a good case for reassessment using these methods.

It should be noted that it is not always possible to be certain that disarticulated remains were originally deposited in that way and may in fact have been articulated burials that became divided over time or naturally moved to another location, for example skulls which can roll due to their shape and are found in rivers and ditch bottoms (Schulting, 2009:5; Mercer and Healy, 2008:515). It is possible that the differential proportions of children’s remains in tombs and causewayed enclosures may result from animals scattering smaller remains prior to them being collected for burial, rather than a deliberate choice (Mercer and Healy, 2008:496). Overall there are a number of potential patterns apparent in the mortuary record for the Early Neolithic, but the challenge is to identify those which stand up to robust analysis.

Summary/Way forward

As noted above, the corpus of evidence for Early Neolithic mortuary practice consists of a disparate collection of data varying in quality and quantity and spanning several hundred years' worth of investigation during different eras of the evolution of the archaeological discipline, comprising antiquarian archives, a small number of more recent excavations and a steadily growing body of reassessment using modern methods. There are obvious challenges to any analysis attempting to combine these incohesive forms of evidence but in order to understand the Early Neolithic better these difficulties must be worked around effectively to uncover valid data and make interpretations that add value to the archaeological record.

A number of aspects of Early Neolithic mortuary practice have been identified as worthy of further investigation, one being the comparison of demographic profiles of populations in different burial contexts including non-monumental ones (Schulting, 2009 and 2012). Scientific data, such as that achieved via isotopic analysis, is in many ways the desirable way forward for accurate interpretations of the prehistoric past. Reliance upon large-scale studies is however constrained by funding, time available and research priorities, and the author would argue that smaller-scale, focussed studies can fill gaps in the knowledge in the meantime. For example, in *Histories of the Dead* it is commented that until reliable analysis of genetic relationships becomes available we will perhaps have to fall back on the range of ages and presence of both sexes and that 'the clues may rest in the details' (Bayliss and Whittle, 2007:134). It seems better to take small steps forward than to tread water. The need for greater control over the measurement of time using radiocarbon dating on human bone to divide burials into generations has been stressed and, alongside this, more studies are needed of both burials and domestic contexts to compare social representations in death and life (Chapman, 2003). Recent advances in the study of mortuary contexts via archaeothanatological techniques (Duday, 2006) open up new possibilities for further and deeper understanding of treatment of the body in prehistoric mortuary contexts (Sofaer, 2013).

Further work on the physicality of Early Neolithic populations has been highlighted as worthy of attention, using macroscopic and metric examination to reveal stature, and also occupational evidence via musculoskeletal stress markers (Smith and Brickley, 2009:147). As regards gender, studies have been consistently and adversely affected by ethnographic analogy and interpretive frameworks, both in terms of osteological analysis of sex and subsequent interpretation of male and female roles in past societies (Edwards and Pope, 2013). Now that this inherent bias in the archaeological record, dating from the antiquarian era onwards, is becoming more appreciated it provides opportunities to reconsider the evidence to illuminate prehistoric gender more objectively.

Furthermore, the use of osteobiological techniques to conduct detailed studies of individual lives in contrast to broader population level studies has the potential to further understanding (Saul and Saul, 1989; Robb, 2002).

In his work on attitudes to the disposal of the dead in southern Britain, Bristow found only slight distinctions between the sexes in the mortuary process in his research and suggested further work be carried out in order to build on this, for instance analysis of orientation, location within monuments, body disposition and burial containers. Furthermore, his research did find distinct differences in age at death, but these findings were based on high level examination and he urged deeper analysis to confirm this apparent pattern (Bristow, 2001).

It is worth noting that the possible interrelationships between causewayed enclosures and flint mines can most effectively be applied to Sussex where there are relatively large numbers of both (Oswald *et al.*, 2001:117). Also, on the South Downs, articulated burials are found in enclosures as well as disarticulated burials which are more usual elsewhere (Healy, 2009:4). The current research considers the evidence for burials at different monument types and this is discussed in Chapters 5 and 6.

Overall it seems there is still much scope for further work on reassessment of the Early Neolithic archaeological record for mortuary practice, particularly in terms of focussed local/regional and comparative studies and specifically related to demographic analyses.

CHAPTER 3 – MATERIALS AND METHODS

This chapter describes the analytical methodology employed, split into three sections covering the incorporation and analysis of existing data from the archaeological record, the assessment and analysis of human remains in museum collections, and analysis of the dataset as a whole.

Incorporation and analysis of existing data

The initial stage of the research comprised a detailed search of existing online databases, such as Historic England's *Heritage Gateway*, Bristow's (2001) *Attitudes to Disposal of the Dead in Southern Britain 3500 BC-AD43*, and the Archaeology Data Service resource, along with a detailed literature search of published monographs, international, national and local journals and unpublished grey literature, and direct contact with museums and Historic Environment Records for database searches of human remains from the Early Neolithic era in south-east England. For the purposes of this research, the full dataset is based upon the counties of statistical south-east England (Office for National Statistics, 2012), namely Berkshire, Buckinghamshire, East Sussex, Hampshire, Kent, Oxfordshire, Surrey, West Sussex, plus Greater London. The distribution of the resultant sites with human remains is shown in Figure 3.1 below.

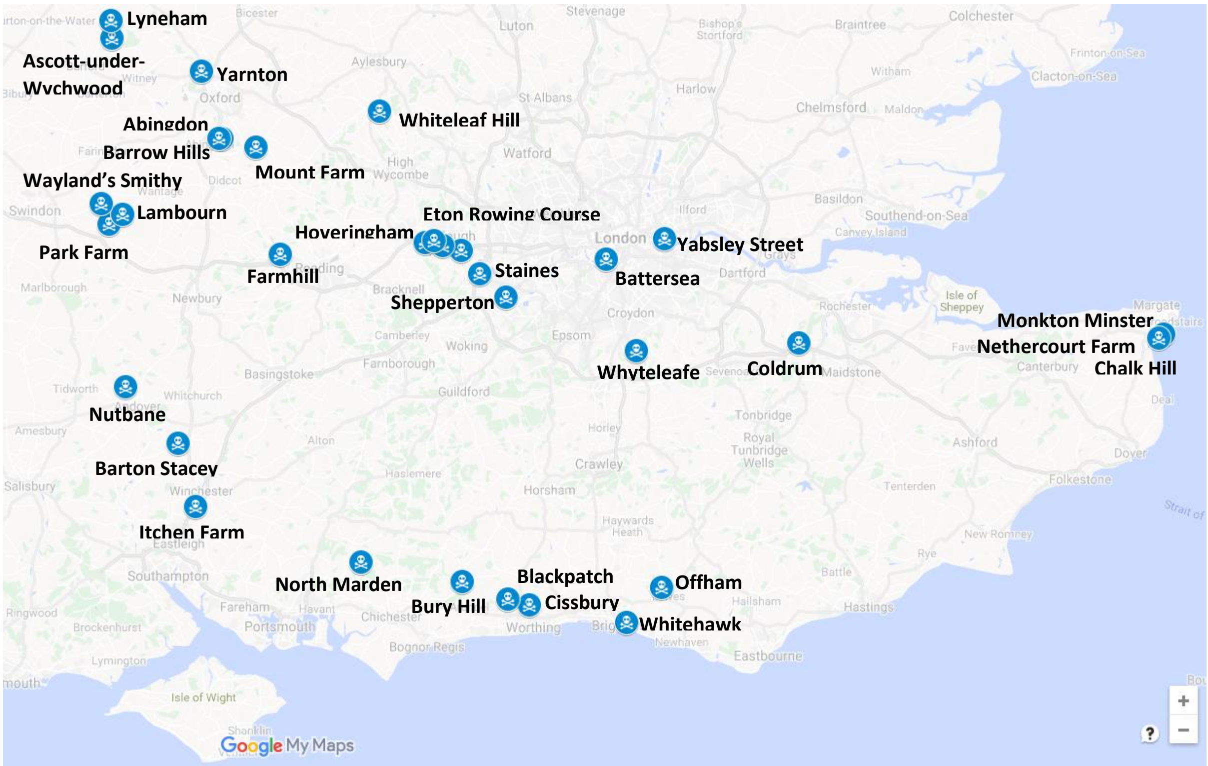


Figure 3.1: Distribution map of Early Neolithic sites with human remains in south-east England

The starting point of the analysis necessitated the creation and implementation of a grading scheme applicable to the several different levels of existing data to reflect the varying standards of previous investigation during different eras and methods of archaeological research. The data available from previous investigations were rated on a scale of 1-6 according to their likely reliability and accuracy as shown in Table 1, with level 1 being the most reliable and level 6 being the least reliable. These ratings are shown in the database at Appendix 1.

Level of previous investigation	**Rating**
21st century reassessment of human remains	1
20th/21st century excavation – records and human remains	2
20th/21st century excavation – either records or human remains	3
Antiquarian investigation – records and human remains	4
Antiquarian investigation – human remains but no records	5
Antiquarian investigation – records but no human remains	6

Table 1: Summary of rating scale of previous analysis

Where recent osteological analysis had taken place the relevant reports of this work were obtained where possible and used as a basis for this study, for example the recent reassessment of the Whitehawk archive (Ponce, 2015). Where no recent osteological study had taken place, any previous written reports were obtained and reviewed and, where the surviving skeletal remains were accessible and well enough preserved, these were subjected to a full osteological examination by the author.

The data identified for the counties of East Sussex and West Sussex was used to form the basis of an initial case study. This selection was made due to the mixture of articulated and disarticulated remains from both monumental and, initially, also non-monumental sites (the latter since ruled out due to inaccurate dating, see Appendix 8). The Sussex data was largely representative of the variety of information in the database overall and enabled the methodology to be tested against the data available, subsequently forming the basis of the approach taken to the analysis of the data for the region as a whole, detailed in this chapter.

Archaeothanatology

An archaeothanatological assessment was carried out on those articulated burials within the database where suitable photographic and/or drawn records existed to enable observation of the burial position and there was sufficient detail to enable identification of individual anatomical elements. The original terminology used to describe the burial positions and the original interpretations of the positions themselves was reviewed and archaeothanatological techniques were used to make interpretations regarding the original burial position compared to the position in which skeletal remains were found when excavated, and whether burials were primary (in their original location) or secondary in nature (Duday, 2009). This was achieved via consideration of the decomposition of persistent and labile bones of the skeleton (Duday, 2009; Gerdau-Radonic, 2012), cultural practices and exogenic factors. Alongside this, wherever possible the accepted consistent and correct terminology for anatomy, planes, direction and movement has been used. A common area of inconsistency in archaeological literature is the interchangeable description of burial positions as 'flexed' or 'crouched' (Knüsel, 2014), which are often to be found in accounts of Neolithic burials, and this is addressed in Chapter 4.

The degrees of flexion were approximated from the horizontal plan where possible, and the photograph where no plan was available, using a protractor to estimate the angle/s between the spinal column and the femur/femorae. When it was possible to estimate the angles for both femorae, the average of the two was used to represent the angle of flexion for the individual. The approximate angles of flexion were allocated to three groups in ascending order, namely 0-45^{o}, 45-90^{o} and 90-135^{o}, with the first two representing acute angles of flexion and the third representing obtuse angles of flexion, as illustrated in the diagrams in Figure 3.2 below.

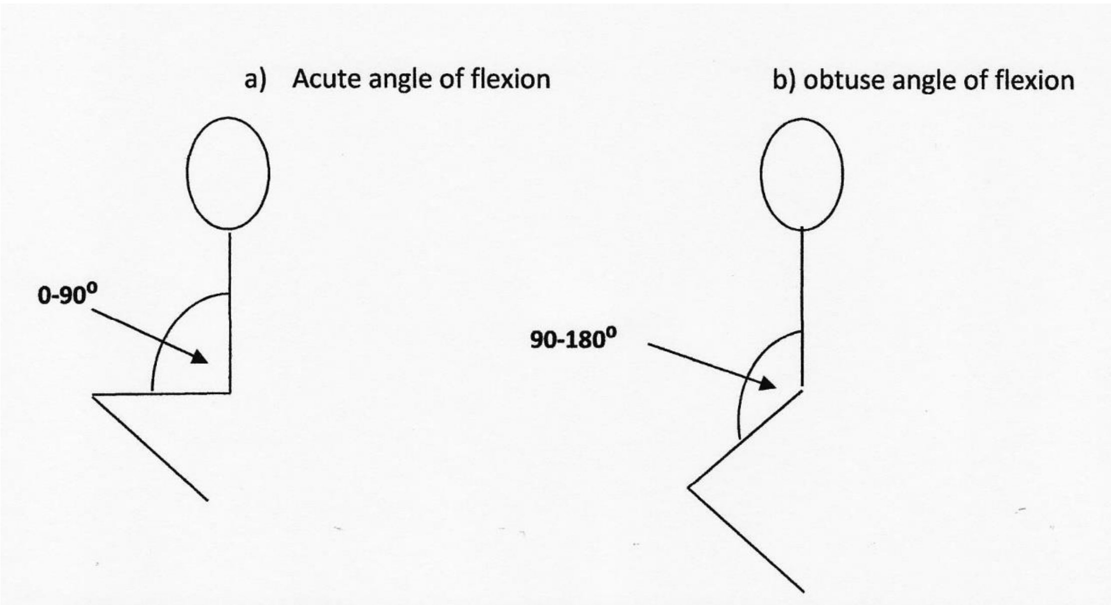


Figure 3.2: Maximum acute and obtuse angles of flexion between the spinal column and femur (ranging from 0^{o} to a maximum of 135^{o} in this dataset)

An individual archaeothanatological assessment report was compiled for each burial in the group using a *pro forma* checklist and recording form, attached at Appendices 5 and 6, respectively. The reports comprise conclusions reached by the author concerning the original burial position and burial space based on observations of the photographs and plans, with consideration of the excavators' interpretations, in conjunction with the skeletal elements inventories from the author's osteological reports (attached at Appendix 4). The archaeothanatological report forms pull together all the data available for the individual burials and the checklist summarises the author's interpretation of the archaeothanatological approaches of Duday (2006), Gerdau Radonic (2012) and Harris and Tayles (2012). The analytical data from the resultant 22 reports is summarised in Chapter 4.

Human remains personally assessed by the author

Where appropriate to do so, that is if the human remains had not been subject to recent or previous detailed analysis and they were accessible, osteological examination was carried out at their holding institutions. Skeletal human remains were handled with care and respect at all times in accordance with the BABAO (British Association of Biological Anthropologists and Osteoarchaeologists) *Code of Ethics* and CIfA (Chartered Institute for Archaeology) *Guidelines to the Standards for Recording Human Remains* (Brickley and McKinley, 2004; Mitchell and Brickley, 2017).

The skeletal remains were laid out anatomically to identify those anatomical elements which were present and absent, and these were recorded on both diagrammatic and written *pro forma*. Osteological techniques were utilised to determine, where possible, age-at-death, sex, metric and non-metric data, and note was made of any observed evidence of musculoskeletal stress markers, pathology or trauma using the methodologies described below. Detailed photographs were taken of all skeletal remains examined. The resultant individual skeletal reports are attached at Appendix 4; the photographic record is available on request. Table 2 below summarises those sites with human remains that were personally assessed by the author.

HAMPSHIRE	Nutbane	articulated x 4, disarticulated x 2
	Barton Stacey	disarticulated x 4
	Itchen Farm	articulated x 1
WEST SUSSEX	Offham Hill,	articulated x 1, disarticulated x 5
	Cissbury	articulated x 1, disarticulated x 2
	North Marden,	disarticulated x 1
EAST SUSSEX	Whitehawk	articulated x 4
	Blackpatch	disarticulated x 2
SURREY	Staines	articulated x 1, disarticulated x 7
	Whyteleafe	disarticulated x 1
BERKSHIRE	Farmhill	articulated x 1
	Lambourn	disarticulated x 2
	Hoveringham	disarticulated x 1
	Park Farm	articulated x 3
BUCKINGHAMSHIRE	Whiteleaf Hill	disarticulated x 1
OXFORDSHIRE	Lyneham	disarticulated x 1

Table 2: Human remains archives personally assessed by the author

Age estimation

Age-at-death was established using standard osteological techniques. Multifactorial age-at-death assessments provide the most accurate results (Lovejoy *et al.*, 1985) and estimates of age were made using a combination of methods. These included the morphological changes observed in the pelvis such as the pubic symphysis (Brooks and Suchey, 1990) and the auricular surface (Lovejoy *et al.*, 1985). Other methods included the development of the epiphyseal union of long bones (Scheuer and Black, 2004), the eruption of teeth and dental development (Gustafson and Koch, 1974 and Ubelaker, 1989), and by analysis of dental attrition (Brothwell, 1981). It was noted that Brothwell's method for analysing dental attrition is dependent on the presence of at least two molars in an individual person's remains. The age categories employed are summarised in Table 3.

Age category	Description	Months/Years
0	Foetus/neonate	Before birth – 11 months
1	Infant 1	12 months – 6 years
2	Infant 2	7-12 years
3	Juvenile	13-17 years
4	Young adult	18-30 years
5	Prime adult	31-45 years
6	Mature adult	45+ years
7	Adult	18+ years
8	Sub-adult	<18 years
9	Unknown	?

Table 3: Age ranges used in study

Sex estimation

An assessment of the biological sex of the adult skeletons was made using multifactorial methods. Thus, a combination of osteometric and dimorphic traits of the pelvis and skull were employed. The osteometric analysis was based on measurements taken on the humeral, radial and femoral heads, the bicondylar width, the maximum length of the clavicle and the width of the glenoid cavity of the scapula. These were estimated following Stewart (1979).

The dimorphic bones analysed were the pelvis and the skull. These were used whenever available, in other words depending on their presence, the degree of preservation and completeness. In the former, the ventral arc, the sub-pubic concavity, the ischiopubic ramus ridge, the greater sciatic notch and the pre-auricular sulcus were used according to Buikstra and Ubelaker (1994) and Bass (2005). In the skull, the nuchal crest, the supraorbital ridges, the mastoid process, the glabellar profile and the mental eminence were used according to Buikstra and Ubelaker (1994) and Bass (2005).

Due to the often fragmentary remains in the dataset, those of the features that were present and identifiable were recorded and those absent were also noted. The combined pelvic and cranial/mandibular data was considered together for each individual and allocated to one of the categories shown in Table 4, namely: male (M), probable male (?M), female (F), probable female (?F), or unknown (?) when the degree of incompleteness, poor preservation or ambiguous results prohibited definitive assignments to either sex. For the purpose of statistical analysis, 'probable males' were grouped with males and 'probable females' were grouped with females. The skeletons of new-born, infant and juvenile individuals were not assigned to any sex category.

Definite female	F
Possible female	?F
Unknown	?
Possible male	?M
Definite male	M

Table 4: Sexing categories of human remains used in study

Metrical analysis

Metrical analyses can be used to estimate stature, body proportions, handedness, age (in non-adults), sex, ancestry (via cranial measurements), activity-related skeletal changes and congenital conditions. In this study, where skeletal remains were sufficiently complete, measurements were taken and recorded from the cranium, mandible and post-cranial skeleton for both adult and non-adult remains. Equipment used comprised an osteometric board, spreading callipers, linear callipers and a tape measure.

Stature was calculated for adult individuals using the femur whenever possible. When this bone was broken, pathological or not present, the tibia or fibula were used instead. Alternatively, when none of the lower limb bones were present, the humerus, radius or ulna was used. Left side bones were preferred over right side bones whenever possible in both upper and lower limb bones. The maximum length of the bones was measured with an osteometric board following the standards proposed by Buikstra and Ubelaker (1994) and the maximum stature was calculated using the equations of Trotter (1970). Stature was estimated on adult individuals only and individuals with undetermined sex were not included in the analysis.

Craniometric studies went out of fashion in British archaeology in the 1960s and 70s along with migration/invasion hypotheses and cultural historic explanations generally. However, recently, interest has increased in migration and mobility studies and this coupled with advances in morphometric studies may, it has been suggested, lead to renewed interest in craniometric studies (Mays, 2010:124). A number of the assemblages used in this study were excavated in the 19th and 20th centuries when the cephalic index was used to suggest differences in cranial vault shape as indicative of distinctions between Neolithic and Bronze Age populations (Morant, 1926). Since this index is no longer in use, mentions of it in excavation reports in this study have been noted and, where possible, visual assessment has been carried out of the cranial vault, facial skeleton and cranial base to attempt to establish ancestry based on the distinct cranial features of the three main accepted population types in use today, namely European, sub-Saharan African and Far East Asian (Bass, 1995:88-92). Where possible, photographs were taken of the anterior and lateral views of skulls, any non-Caucasoid features were noted and an initial assessment of ancestry was made.

Non-metrical analysis

Any non-metric traits observed on the cranium, mandible and post-cranial skeleton during the analysis were recorded (Buikstra and Ubelaker, 1994:85-94). These included traits that could potentially be interpreted as either genetic in origin or related to habitual activities (Berry, 1975; Finnegan, 1978; Tyrell, 2000), in the form of cortical defects or musculoskeletal stress markers which are linked to body size and age as well as patterns of behaviour.

Pathological changes and trauma analysis

Any observed evidence for pathological change was noted and photographed to aid later diagnosis and was retained as a photographic record for this study. Note was made of any observed indications of potential ante-mortem, peri-mortem or post-mortem trauma and was photographed for later analysis.

Commingled remains

Due to the burial practices of the period, in earlier Neolithic assemblages the human remains are often commingled and therefore in this study, where possible, attempts were made to divide the skeletal remains into those for separate individuals. This was carried out via observations of variation in colour, degree of preservation, size differences (particularly of the long bones, talus, calcaneus, metatarsals, metacarpals, scapula, clavicle, pelvis and patella), bone shape, articulation (femoral head and acetabulum, femoral condyles, proximal tibia, proximal ulna, distal humerus and vertebrae), anomalies, wear of teeth in adults, occlusion, sex differences and sutural variation (Brothwell, 1981:17).

Minimum number of individuals

Due to the often disarticulated and fragmentary nature of the skeletal remains in the study dataset it was necessary to use minimum number of individuals (MNI) estimates in some cases. Where recent reassessment work had taken place the MNIs arrived at by other researchers were used for this study, however where no recent or previous analysis had been undertaken estimates were made using the method of White and Folkens (2005). Thus, the bones were separated according to element and sided. Taking each element category in turn, the minimum number of individuals was counted for each side, considering possible joins and assessing the age of each fragment. The bones were then checked for individuals represented by left-side bones that matched or possibly belonged to those from the right and those that did not were added to the minimum number count, the total being the greatest minimum number of individuals for the assemblage.

Cremated remains

Recent reassessments have found quantities of cremated bone within collections of human remains which were not recorded at the time of excavation. Cremated bone was not often retained during early excavations as it was either not identified as such or felt to have little value archaeologically. However, cremated bone survives well in the archaeological record, often better than inhumed bone, and reliable methods now exist for its analysis (Smith and Brickley, 2009:58).

During this research note was made of any burnt bone as evidenced by observed features of fragmentation, warping, shrinkage or discolouration. Where sufficient quality and quantity existed, the total weight of burnt remains was recorded and where possible they were sieved through 10 mm, 5 mm and 2 mm sieves and the proportions were recorded. A complete modern adult cremation weighs around 1.63 kg (McKinley, 1993:285). Record was also made of maximum fragment size and the bones were sorted into skeletal elements and weighed. Where possible, age and sex were estimated. Identifiable elements were listed, minimum number of individuals were recorded and note was made of any observed pathology.

Taphonomy

The variety of burial locations in the earlier Neolithic can lead to many types of *post-mortem* modification of human skeletal remains due to taphonomic processes. It is therefore important to be aware of and identify these where possible using all the osteological and archaeological evidence available for the sites being studied. Clearly the nature and extent of the evidence is highly variable due to the time span involved in the study overall, however it is relevant to the accuracy of the research to identify the nature of *post-mortem* modification wherever possible. To this end, in this study broken human bones were examined for signs of surface, colour and edge characteristics indicative of either ancient fracture or recent fracture of dry bones likely to have taken place during excavation, transport or post-excavation washing, for example (White and Folkens, 2005:51).

Absence of smaller skeletal elements, for example finger bones, could be interpreted in several ways and consideration should be given to the role of natural processes versus human activity/behaviour, such as secondary burial practices, for example. This should take into account the effect of taphonomic processes on different bone structures throughout the skeleton, for example the femoral shaft is more likely to remain intact than the sternum which is smaller and more fragile (White and Folkens, 2005:52). Similarly, differences in depositional environments and their effect on preservation should be considered. To this end, all available evidence was studied, specifically the human remains themselves as well as excavation reports, and any other surviving written records, for indications of bone structure and deposition environment. Soil acidity (pH), permeability, moisture, temperature, and microorganisms can all significantly affect the rate of skeletal deterioration and any indications of these were considered when examining the skeletal remains in the dataset. In general, bone preservation is better in well-drained areas with low water tables and in soils with neutral or a slightly alkaline pH and in temperate areas (Henderson, 1987), however preservation is dependent on a unique combination of these in local depositional settings. Other evidence borne in mind when examining the skeletal remains was that for animal gnawing and root etchings, as distinct from indications of human modifications such as burial position, cut marks, chop marks and scraping marks and projectiles, cremation and the effects of these on the skeletal remains.

Analysis of the database as a whole

Sites absolutely- or relatively-dated to the Early Neolithic containing human remains were identified and specific data was compiled on each site comprising:

County
Reliability of data
Grid reference, eastings and northings
Primary burial location
Secondary burial location
Estimated biological sex
Estimated biological age
Age category
Recorded burial position
Recorded burial orientation
Recorded side buried on
Radiocarbon dates
Associated finds
Pathology
Written records

The data is held in an Excel spreadsheet at Appendix 1.

Age estimates arrived at via personal study as well as those obtained from recent reassessment by other researchers were, where possible, allocated to one of the osteological age groups 1-8 shown in Table 3. However, due to the inherent inconsistencies in the data resulting from skeletal remains assessed recently being combined with those examined in the past, age groups 7-9 ('adult', 'sub-adult' and 'unknown') were used where there was ambiguity. These simplified age groupings cover all categories and enabled analysis of the dataset as a whole to be undertaken.

Radiocarbon dating

For the purposes of this research the timeframe 4000-3300 BC was used to represent the Early Neolithic period in south-east England, in line with Historic England's definition (FISH, 2015). It should be noted that dating for prehistoric eras is by nature imprecise and therefore no definitive start or end points are knowable or indeed consistently applied in the archaeological record. The

700-year period used for this research is, however, generally representative of the era in question and has been used to provide cut-off points for compiling the database.

During the course of this study, the human remains assemblages from individual sites were considered in terms of existing radiocarbon dates and those remains not currently dated that may provide appropriate samples for future dating. Criteria for inclusion in such a study were those that could be expected to add meaningful data to a particular site or local/regional area and where suitable samples were likely to be obtainable and the number of potential samples was likely to be achievable financially (subject to funding). During the course of this research, a programme of radiocarbon dating was funded by the University of Winchester on samples from eleven individuals, several of which had previously been identified as possibly Neolithic in date but lacked relative or absolute dating evidence, for a study on prehistoric human remains in the collection at Brighton Museum (Cansfield *et al.*, 2017, attached at Appendix 8), and a further seven are in the process of being sampled for a separate study of prehistoric burials in south-east England (Cansfield and Thorpe, forthcoming).

The radiocarbon determination data that is available for burials in the database is represented according to the conventions of Millard (2014). Those radiocarbon dates which are available for burials in the database are summarised in Appendix 3, which lists skeletal elements sampled, laboratory numbers, radiocarbon age, calibrated ^{14}C date ranges and delta ^{13}C where available. The calendar date ranges result from calibration of the raw dates at 95% confidence using IntCal 13 atmospheric curve (Reimer *et al.*, 2013), generated by OxCal version 4.3, rounded to the nearest 10 for margins of error greater than ± 30 years and to the nearest 5 for margins of error less than ± 30 years. The calibrated probability distributions, illustrated on a site-by-site basis and grouped by site type, are shown in Figures 6.2 and 6.3 and discussed in Chapter 6.

Statistical analysis

Proportional analysis was applied categorically by the sex and age of the individuals to burial sites, locations, positions, orientations and grave goods. Due to the inherent variability in the skeletal elements present, the figures calculated are crude rather than true prevalence rates. The data was analysed as an overall dataset and also broken down by counties and regionally across the study area to compare and contrast demographic patterns of burial practice geographically.

Life table modelling was carried out to calculate age-at-death/life expectancy for the study cohort using the following formulae adapted from Chamberlain (2006):

x = age at beginning of interval e. g. 0 for interval 0-1 year, 1 for interval 1-6 years, etc

Int length = length of interval in years, e. g. 1-6 years interval = 6 years, 7-12 years interval = 6 years

Dx = number in age category

dx = proportion of deaths: $\frac{Dx}{\text{Total } Dx}$

lx = survivorship into next age group: lx – dx (starts with 1.0)

qx = probability of death in age group: dx/lx

Lx = average proportion of individuals at beginning of each interval x length of interval in years:

$$\frac{lx + (lx - dx)}{2} \times \text{interval length}$$

Tx = sum of average years lived in current and remaining intervals:
Sum of Lx column = 1st Tx value, then deduct Lx and work down the columns

ex = average life expectancy: $\frac{Tx}{lx}$

The findings resulting from the analyses detailed above are summarised in Chapters 4 and 5.

CHAPTER 4 – FINDINGS

This chapter summarises the analysis of the data for this research. These findings are discussed and interpreted in greater depth in Chapters 5 and 6. The findings in this chapter are broken down under the topics of the composition of the dataset, age at death, life expectancy, burial locations, temporality, burial positions, archaeothanatological analysis, burial orientations, grave goods, pathology and the archaeological record by county.

Dataset

The dataset for this research comprises the burials of a total of 136 individuals, 39 articulated and 97 disarticulated/fragmentary (see detailed summary at Appendix 1). Overall there are significantly more disarticulated burial deposits (71%) than articulated ones (29%) and significantly more burials overall are of adults (79%) compared with sub-adults (21%).

Proportionally, 49% (n. 19) of the articulated burials, 27% (n.26) of the disarticulated/fragmentary burials and 33% (n.45) of the overall total burials were estimated to be male, and 31% (n. 12) of the articulated burials, 19% (n.19) of the disarticulated burials and 23% (n. 31) of the overall total burials were estimated to be female; the remainder were of indeterminate sex.

In terms of age, 79% (n. 108) of the overall total were found to be adults and 21% (n. 28) were sub-adult. Of the articulated burials, 80% (n.31) were adults, as were 80% (n.77) of the disarticulated/fragmentary burials. Sub-adults comprised 20% (n.8) of the articulated burials and 20% (n.20) of the disarticulated/fragmentary burials overall. Table 5 summarises these figures.

	Articulated		Disarticulated		Combined	
	n.	%	n.	%	n.	%
Female	12	31	19	19	31	23
Male	19	49	26	27	45	33
Indeterminate	8	20	52	54	60	44
Adult	31	80	77	80	108	79
Juvenile	4	10	8	8	12	9
Infant	4	10	12	12	16	12
TOTAL	39	100	97	100	136	100

Table 5: Proportions of burials by sex and age overall

Age at death

Age at death estimates for all burials are summarised by age range in Table 6, below.

Age category	Description	Months/Years	n.	%	F n.	F %	M n.	M %
0	Foetus/neonate	Before birth – 11 months	3	2				
1	Infant 1	12 months – 6 years	4	3				
2	Infant 2	7-12 years	9	7				
3	Juvenile	13-17 years	7	5				
4	Young adult	18-30 years	27	20	8	30	12	44
5	Prime adult	31-44 years	10	7	4	40	2	20
6	Mature adult	45+ years	9	7	2	22	6	67
7	Adult	18+ years	60	44	17	28	23	38
8	Sub-adult	<18 years	7	5				

Table 6: Proportions of age at death in the dataset

In simple terms, 106 (78%) of the individuals in the dataset were adults (defined as age 18 years and above) at the time of death, whereas only 22% of the individuals were sub-adults at death.

Due to the limitations of age estimation, particularly in fragmentary human remains, a proportion of individuals are recorded as having died broadly between the ages of 18 and 60 years. Although these can be confidently described as adult individuals, it has not been possible to allocate them to narrower age ranges. However, of those adult individuals where more precise aging was possible, the majority (59%) were aged between 18 and 30 years at death, 22% were aged 31-44 years and 19% were aged over 45 years. Of the sub-adult individuals, most (39%) were aged between 7-12 years at death, while 30% were aged between 13-17 years, 17% were between 1-6 years and 13% died in their first year. When considering the age ranges as a whole (excluding those individuals in the broad age categories 7 and 8), the most common range for age at death is 'young adult' at 39%, followed by 'prime adult' (14%) and 'mature adult' (13%) and 'infant 2' (13%), then 'juvenile' (10%), 'infant 1' (6%) and finally 'foetus/neonate' (4%). Sub-adults are therefore most likely to die between the ages of 7-12 years, followed by 13-17 years, then 1-6 years and least likely to die in their first year of life.

Of those individuals aged 18-30 years ('young adults'), there are more males (44%) than females (30%), with 26% of indeterminate sex. In the 18-60 (broad 'adult') age range there are also more males (38%) than females (28%) with 33% of indeterminate sex, however, there are more female 'prime adults' (31-45 years) at 40% than male (20%). Mature adults (45+ years) comprise 67% males and 22% females of the total for that range. This is considered further in Chapter 6 in the broader context of the demography of Early Neolithic burial practice in south-east England.

Life table

More detailed analysis of age at death and life expectancy is illustrated in the form of a life table. The methods of calculation are outlined in Chapter 3 and Table 7 shows data for the age ranges in the dataset. Because sex has not been estimated for categories 0-3, life expectancy has not been calculated separately for the sexes.

Cat	Int Range	Int length	Total						
	X		n	lx	dx	qx	Lx	Tx	ex
0	0-1	1	3	1.00	0.02	0.02	0.99	43.36	43.36
1	1-6	6	4	0.98	0.03	0.03	5.79	42.37	43.23
2	7-12	6	9	0.95	0.07	0.07	5.49	36.58	38.50
3	13-17	5	7	0.88	0.05	0.06	4.28	31.09	35.33
4	18-30	13	27	0.83	0.20	0.24	9.49	26.81	32.30
5	31-44	15	10	0.63	0.07	0.11	8.92	17.32	27.49
6	45-60	16	9	0.56	0.07	0.12	8.40	8.40	15.00
7	18-60	43	60						
8	0-18	18	7						

Table 7: Life table showing data for age ranges

Key

Lx = survivorship
dx = proportion of deaths
qx = probability of death
Lx = average years per person lived within age interval
Tx = sum of average years lived within current and remaining age intervals
ex = average years of life remaining (average life expectancy)

This demonstrates an average life expectancy of 43.36 years for a new born baby in this Early Neolithic population, dropping to 15.0 years in the oldest age group, which translates to an average expected age at death of 60 years for those that live to be 45 years. The age range with the highest number of individuals (young adults, 18-30 years) has a life expectancy of 32.30 years, equating to an average age at death of 50.3 years for those who survive to 18 years. These figures are interpreted further in Chapter 6.

Burial locations

Further to the Literature Review (Chapter 2), which indicated a range of locations where Early Neolithic burial deposits are found, the proportion of individuals buried in different types of location has been determined. These are divided into four monumental categories of long barrows, oval/round barrows, causewayed enclosures and flint mines, with a further non-monumental category for individual burials not located on an identified monumental site. Figure 4.1 gives a breakdown of all individuals by location and demonstrates clearly that the highest incidence of burial overall is in long barrows (51%) with the next highest proportion being in causewayed enclosures (26%), followed by non-monumental locations (11%), and oval/round barrows and flint mines with the fewest, both at 6% of the total.

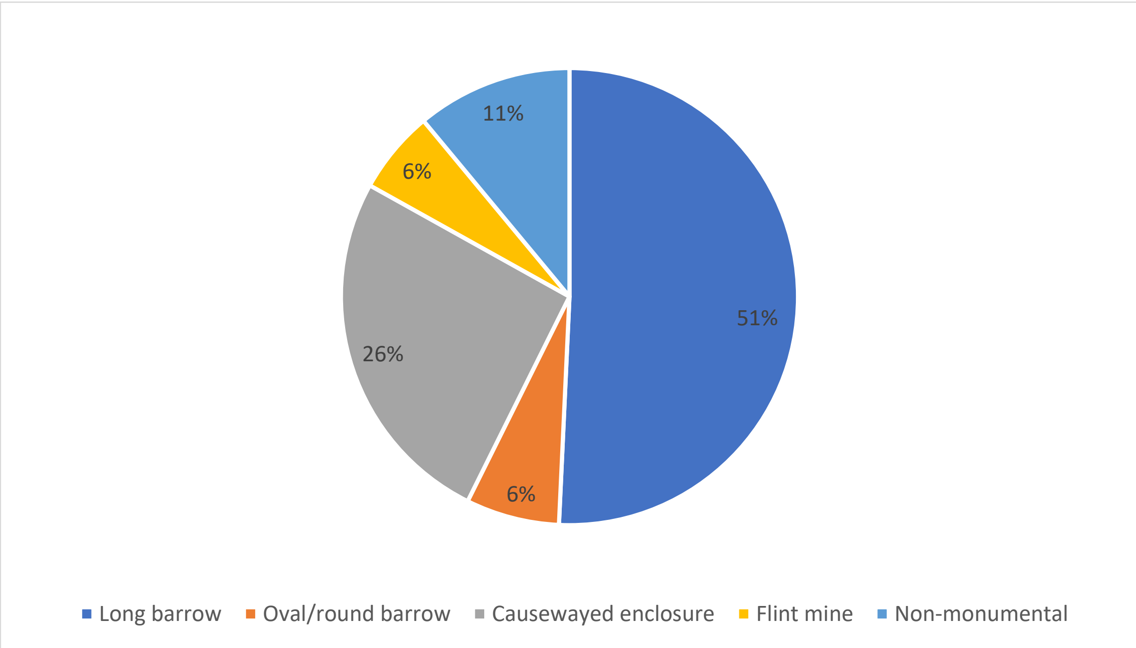


Figure 4.1: Proportions of all burials by location

When the figures are separated into articulated and disarticulated/fragmentary burials, in both cases the most common location is, again, long barrows (33% and 58%, respectively), followed by causewayed enclosures (23% and 27%) and articulated burials at non-monumental locations at 18% (disarticulated comprise 8%). There are again much lower proportions for flint mines (13% and 3%) and oval/round barrows (13% and 4%). These figures are illustrated in Figures 4.2 and 4.3.

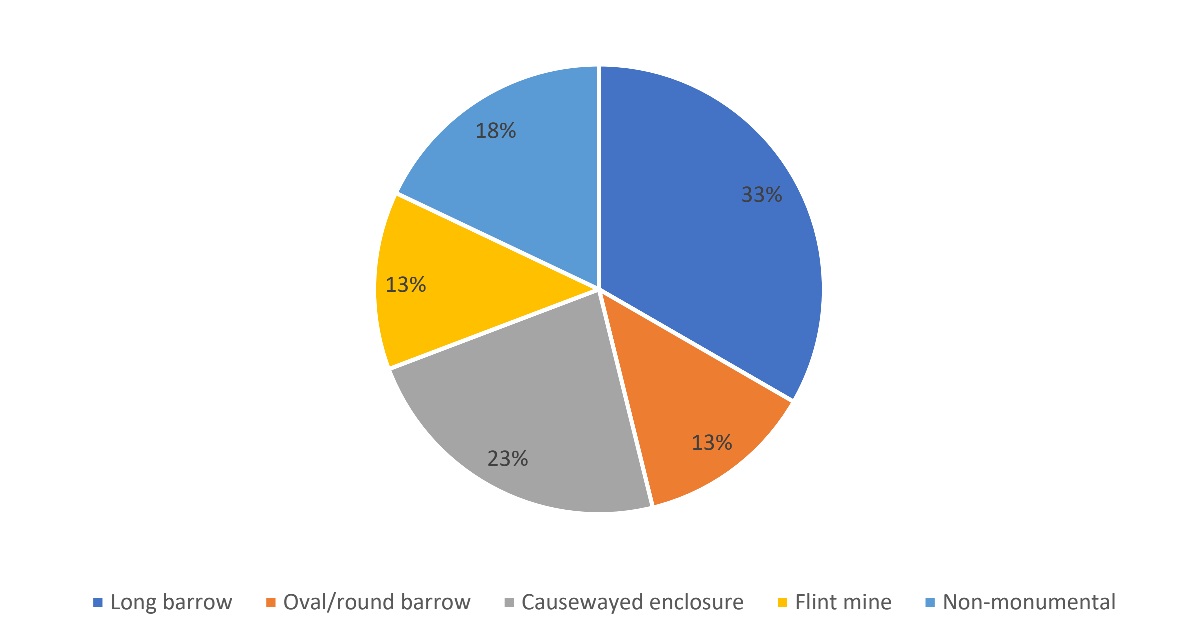


Figure 4.2: Proportions of articulated burials by location

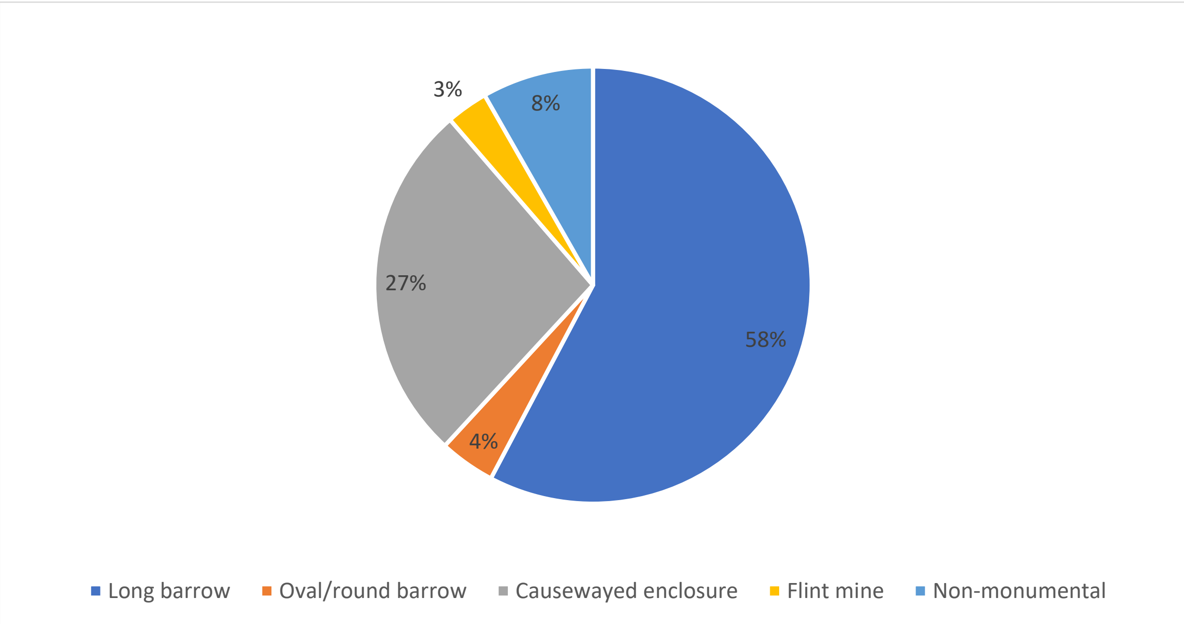


Figure 4.3: Proportions of disarticulated burials by location

Although the ranking of the burial locations is similar for articulated and disarticulated burials, there is clearly a significantly higher proportion of disarticulated burials in long barrows at 58% (n. 56) compared to articulated burials at 33% (n.13). Burials at causewayed enclosures, however, are proportionately similar at 23% (n. 9) of articulated burials and 27% (n.26) of disarticulated burials. Although non-monumental locations are the third most common place for both articulated and disarticulated burials, the proportion for disarticulated is only 8% (n.8) compared with 18% (n.7) for articulated burials. The remainder of articulated burials comprise 13% (n.5) in flint mines and oval/round barrows.

The burial data can be further broken down for those individuals where it was possible to estimate sex (see Figure 4.4). Articulated females are more commonly found at causewayed enclosures (33%), then non-monumental locations (25%) and flint mines (25%), with fewest at oval/round barrows (8%) and long barrows (8%). Articulated male burials, however, are mostly found in long barrows (53%) and oval/round barrows (16%) with an even distribution of 10% each on other site types.

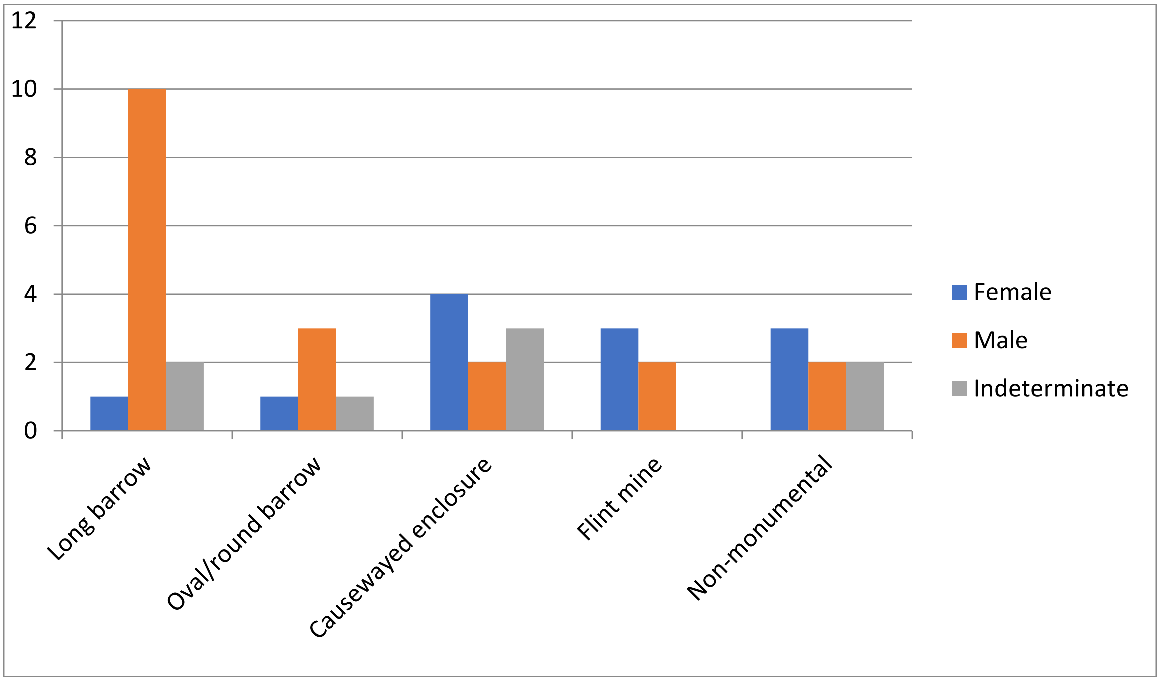


Figure 4.4: Locations of articulated burials by sex

Disarticulated/fragmentary burials of both sexes are found in the highest quantities at long barrows (71% of females and 62% of males) followed by causewayed enclosures (29% of females and 19% of males). It is observable, therefore, that while the burial locations for disarticulated human remains deposits are proportionally very similar for both sexes, there is a clear difference in the data for articulated female and male burials, with females more often buried at causewayed enclosures while males are mostly buried at long barrows.

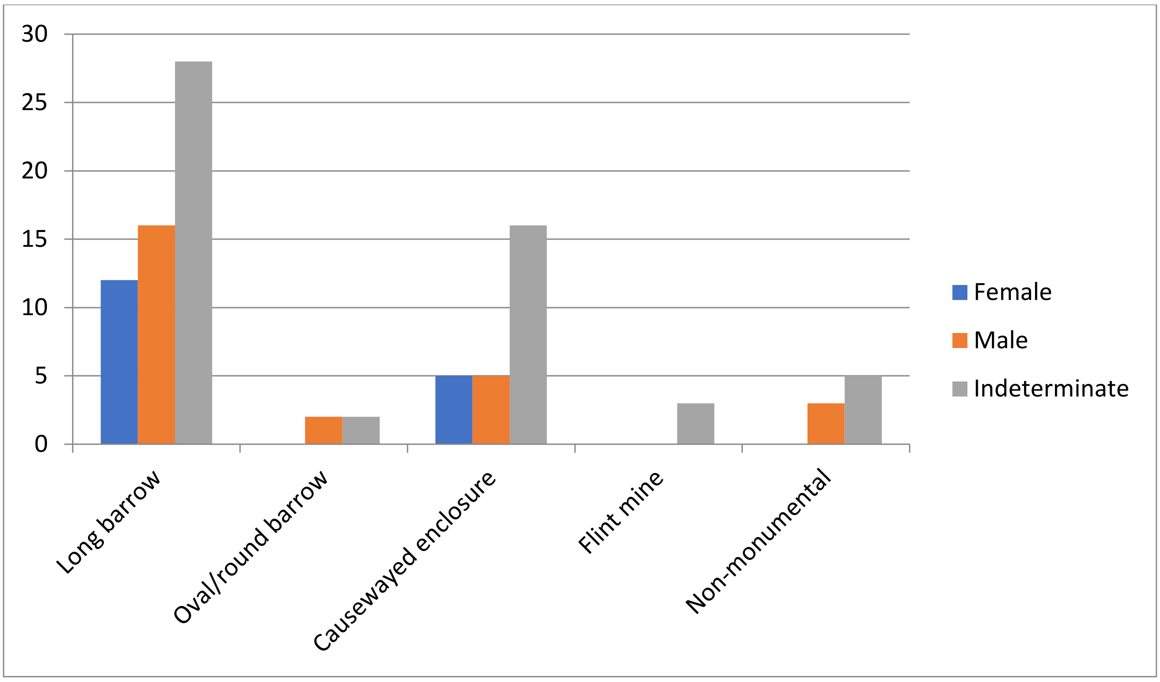


Figure 4.5: Locations of disarticulated/fragmentary burials by sex

Analysis of the age groupings of articulated burials (Figure 4.6) shows that adults are found at all site types but that a significant proportion are in long barrows (33%) compared to all the other locations. Articulated burials of juveniles are found at barrows and causewayed enclosures but in much smaller quantities than adults, and infants are found only at causewayed enclosures (50%) and non-monumental (50%) locations.

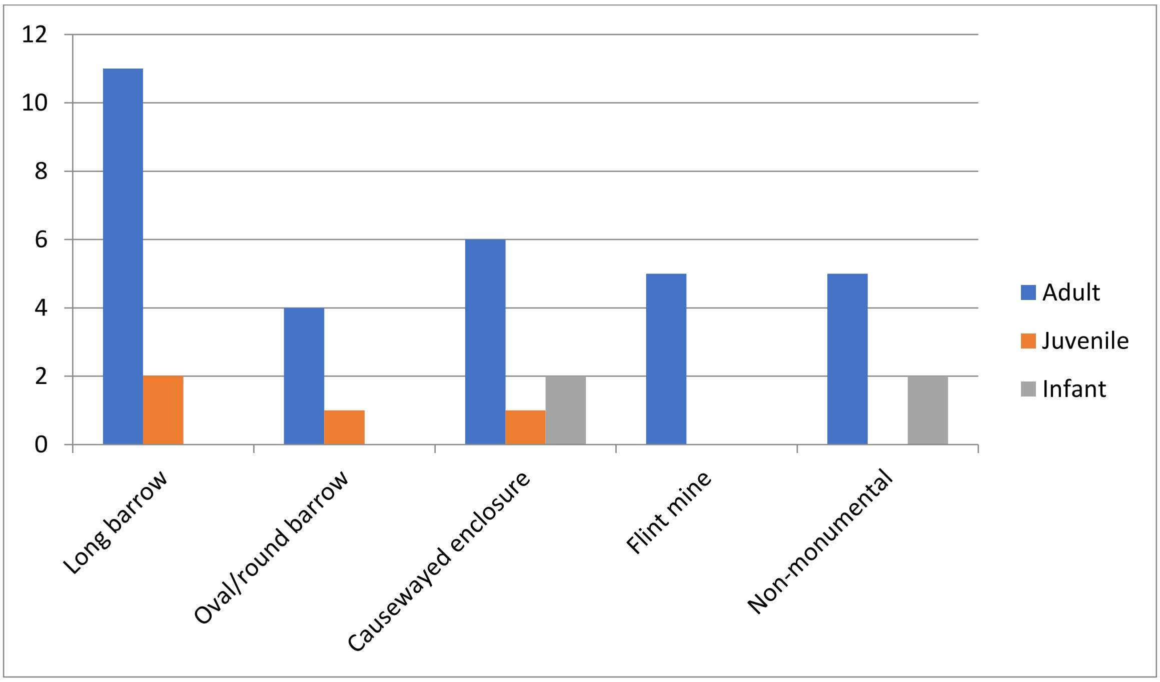


Figure 4.6: Locations of articulated burials by age group

In the case of disarticulated/fragmentary burials, adults are mostly found at long barrows (55%) with a significant proportion also found at causewayed enclosures (27%). No disarticulated/fragmentary juveniles or infants were found in oval/round barrows or non-monumental locations but both age groups were found in long barrows (11% and 16% of burials at these, respectively) and causewayed enclosures (3% and 22%, respectively), with a higher proportion being infants in both cases.

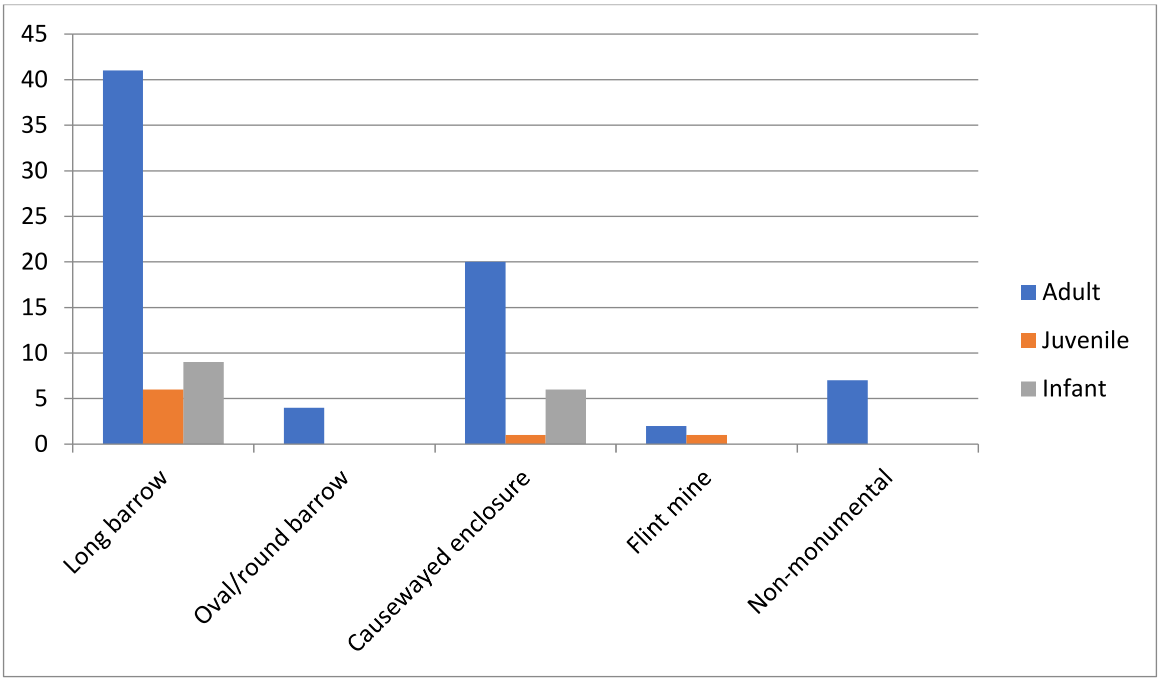


Figure 4.7: Locations of disarticulated/fragmentary burials by age group

Overall, looking at burial locations by type, most burials, both articulated and disarticulated, are found at long barrows (33% and 58%, respectively), followed by causewayed enclosures (21% and 28%) and non-monumental locations (21% and 7%) with smaller proportions at flint mines (13% and 3%) and oval/round barrows (13% and 4%).

<u>Temporality</u>

In order to identify the temporal spread of burial deposits across the south-east region, for those sites where radiocarbon dates exist (summarised in Appendix 3), the earliest and latest calibrated dates of burials have been plotted to give a site-by-site range, shown in Figure 4.8 below. To establish the timespan of burial activity at individual sites, the dates used range from those for individual, non-monumental burials to the earliest and latest dates from group or multiple burials at monumental sites.

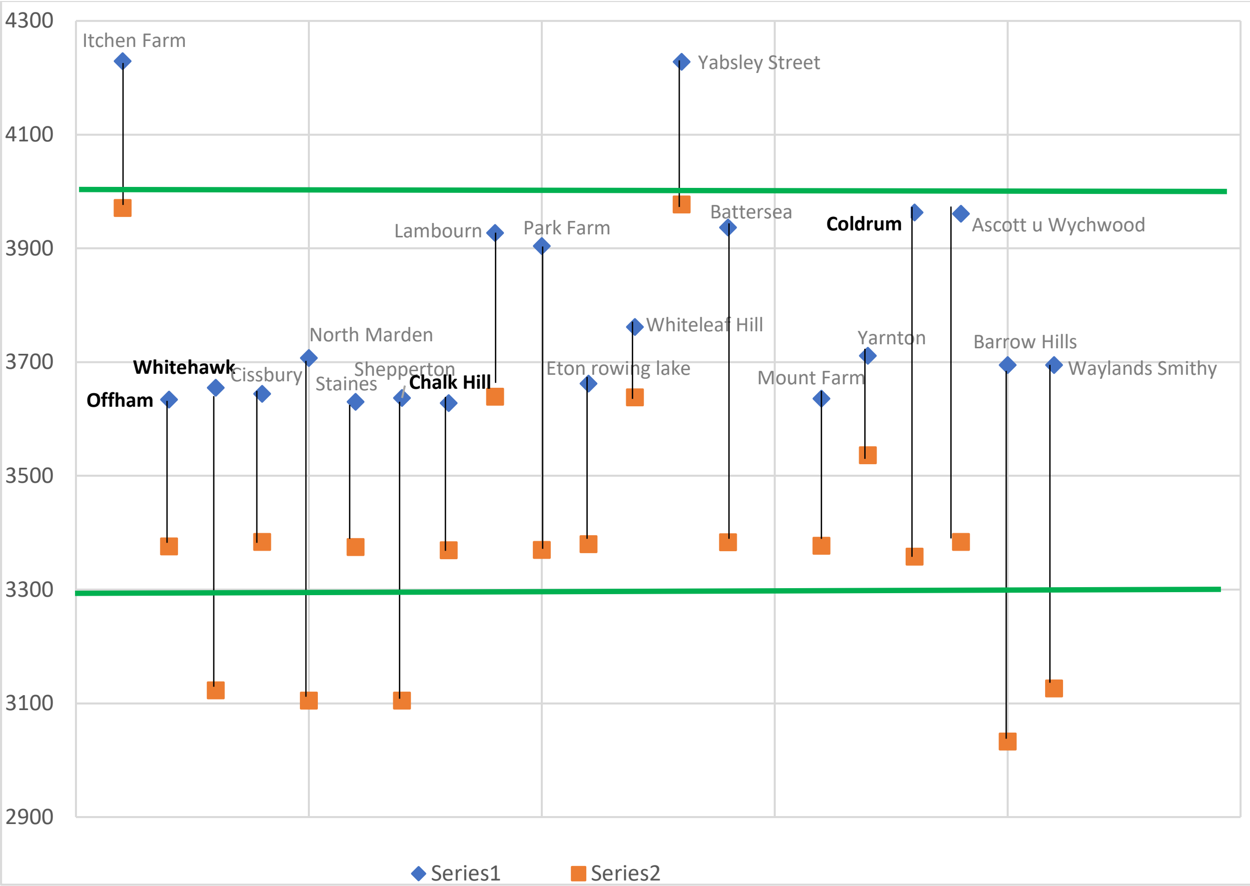


Figure 4.8: Ranges of earliest and latest calibrated radiocarbon dates for burials by site
Y axis = years cal BC. Series 1 = Earliest radiocarbon date for burials on site; Series 2 = Latest radiocarbon date for burials on site; vertical lines indicate radiocarbon date ranges for sites (note: number of dated burials varies by site from one to multiple); horizontal green lines indicate Early Neolithic period as defined in this research c.4000-3300 BC

Based on the defined Early Neolithic period for this research of c.4000-3300 BC, several observations can be made concerning the chronology of the burial deposits on these sites. Firstly, there are several outliers from the main cluster of burial dates. The non-monumental burials at Itchen Farm in Hampshire (4230-3970 cal BC, KIA-42095) and Yabsley Street in Greater London (4230-3975 cal BC, KIA-20157) are the two earliest in the dataset. At Itchen Farm was the burial of a 4-6 year old child and at Yabsley Street that of a young female adult. This research has used c.3300 as a cut-off point for inclusion of burial data, however two barrow sites with multiple burials extend into the period later than this, and the dating for the context of the cranium at North Marden oval barrow has a wide range of 3710-3110 cal BC (HAR-5544) which also potentially takes it into this later period. Long barrow burials as a category have the longest range of activity, dating from 3900 BC for a period of 700 years, with burials at Coldrum in Kent spanning virtually the whole Early Neolithic period. Burials at long barrows are also the second-earliest after the two non-monumental examples already mentioned. Causewayed enclosures have a much shorter range of burial dates, all dated to a 300 year period between 3600-3300 cal BC. Finally, round barrows and oval barrows range from 3800-3300 cal BC (with the exception of the imprecise date for North Marden, noted above). Nearly all the earliest dated burials at causewayed enclosures are females but there is a fairly equal split between the sexes at all other burial locations.

The temporality of Early Neolithic burials in south-east England is discussed further in Chapter 6 and radiocarbon curves by site type are shown in Figures 6.2 and 6.3.

Burial positions

The burial position terminology recorded by the original excavators is summarised in Figure 4.9. This shows that female burials are variously described as 'crouched', 'flexed', 'semi-prone' and 'contracted'. Male burials, however, are recorded mostly as 'crouched' with some instances of 'contracted' and one 'flexed'. Juveniles are recorded as 'crouched' and 'semi-prone' and infants as 'couched', 'flexed' and 'curled up'.

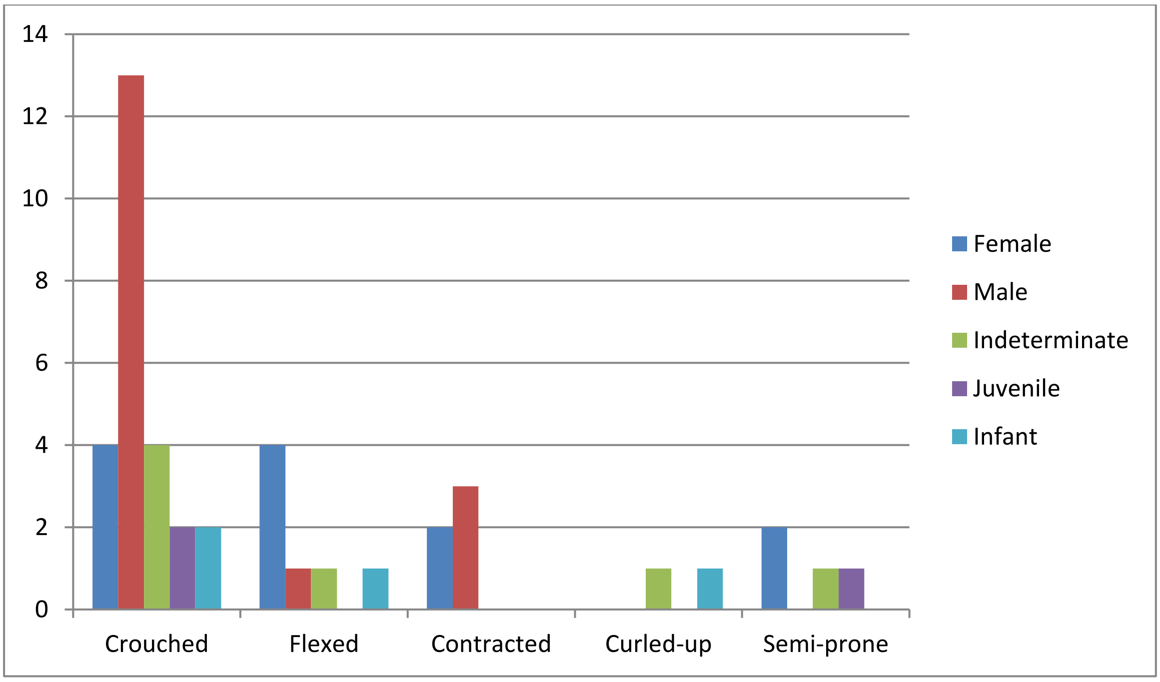


Figure 4.9: Burial position descriptions by sex and age group

This variety and inconsistency of descriptions is typical for the prehistoric burial record and makes comparison difficult. Therefore, this research has revised these using archaeothanatological methods, the results of which are given below.

Archaeothanatological analysis

Analysis was carried out on 22 articulated burials from the overall dataset for which there were sufficiently detailed plans and/or *in situ* photographs, with the dual aims of reviewing the original burial position terminology and the interpretations themselves, using the methodology described in Chapter 3. Table 8 gives an overall summary of this analysis.

Sex*	Site (year excavated in brackets)	Skeleton number	Left or Right leg angle	Flexion from spinal column	Original description of burial position at point of excavation	Revised description of original burial position
F	Whitehawk (1933)	SKI	R	60^o	Semi-prone	Flexed on left, semi-prone upper body
F	Whitehawk (1933)	SKII	L	90^o	Semi-prone	Flexed on right
F	Cissbury (1953)	Shaft 27	R	130^o	Flexed/ extended	Flexed on left
M	Cissbury (1878)	Shaft VI	L + R	60^o + 40^o	Contracted	Flexed on right
M	Nutbane (1959)	1	R	70^o	Crouched	Flexed on back, legs to left
?M	Nutbane (1959)	2	R	20^o	Crouched	Flexed on back, knees up?
J	Nutbane (1959)	3	L + R	80^o + 80^o	Crouched	Flexed on right
M	Nutbane (1959)	4	L + R	30^o + 30^o	Crouched	Flexed on right
M	Offham Hill (1977)	Burial 1	L	80^o	Crouched	Flexed on right
F	Staines (1964)	1964, 2-6.7581	R	100^o	Flexed	Flexed on back, legs to left
J	Itchen Farm (2006)	SK3567	L	40^o	Crouched	Flexed on right
?	Barrow Hills (1983-85)	5354	L	40^o	Crouched	Flexed on right
?F	Barrow Hills (1983-85)	5356	L	80^o	Crouched	Flexed on right
?F	Yabsley Street (2002)	Grave 100	R	70^o	Flexed	Flexed on left
?M	Monkton Minster (1994-95)	2079	L	80^o	Crouched	Flexed on back?

J	Park Farm (1978)	Burial 1 (context 25)	R + L	30^o + 30^o	Crouched	Sitting/on back?
F	Park Farm (1978)	Burial 2 (context 26)	L	20^o	Crouched	Sitting/on back?
M	Park Farm (1978)	Burial 3 (context 27)	L	40^o	Crouched	Flexed on right
M	Waylands Smithy (1962-63)	WS1/PB1	L + R	30^o + 30^o	-	Sitting (then upper torso fell to left)?
M	Waylands Smithy (1962-63)	WS2/PB2	R	50^o	-	Flexed on right or sitting
?F	Staines Road, Shepperton (1989)	G10	L + R	90^o + 60^o	Crouched	Flexed on right
M	Mount Farm (1977-78)	F602	L	50^o	Crouched	Flexed on back or left?

Table 8: Summary of archaeothanatological analysis of burial positions
F/?F = female/probable female, M/?M = male/probable male, I = Indeterminate, J = juvenile (unsexed). When degrees of flexion for both legs taken, average angle used for calculations

Dictionary definitions can be used as a starting point for attempting to understand the origins of burial position terminology used in the literature. ‘Flexed’ is defined as a limb or joint bent or becoming bent and, interestingly, has a specific archaeological definition of ‘relating to or denoting a practice of burying a corpse with the legs drawn up under the chin’ (Oxford Dictionaries, [online]), while ‘crouched’ is defined as a position where knees are bent and the upper body is brought forward and down, and ‘contracted’ is to decrease in size. Table 9 gives examples of the variety and inconsistency in the archaeological record from the 19th century onwards in descriptions of prehistoric burial positions, ranging between ‘legs and knees drawn up’ (Colt Hoare, 1812), ‘sitting posture’ (Colt Hoare, 1812; Thurnam, 1860), ‘knees drawn up’ (Smith, 1870; Curwen, 1954), ‘crouched’, ‘crouched up’, ‘crouched/foetal’ or ‘crouched on side’ (Smith, 1870; Grinsell, 1936; Piggott, 1954), ‘doubled up’ (Smith, 1870; Grinsell, 1936), ‘contracted/natural position of sleep’ (Peake, 1931; Grinsell, 1936; Curwen, 1954; Piggott, 1954), and ‘lightly flexed’, ‘considerably flexed on side’ (Piggott, 1954).

Date	Author	Publication/subject	Terminology used	Era
1812	Colt Hoare	Ancient History of Wiltshire	Legs and knees drawn Limbs gathered up and crossed Sitting posture Legs gathered up	Neolithic/Bronze Age Bronze Age Bronze Age Bronze Age
1860	Thurnam	West Kennet long barrow	Sitting posture, legs flexed	Neolithic
1870	Smith	Prehistoric Burials in Sussex	Doubled up, knees drawn up to chin Crouched up	Neolithic/Bronze Age (Alfriston) Celtic (general description, includes illustration)
1931	Peake	Berkshire County Archaeology	Contracted Crouched Contracted Contracted	Neolithic Neolithic (Wayland's Smithy) Neolithic (Long Wittenham) Bronze Age
1936	Grinsell	Ancient burial mounds	Doubled up Crouched Crouched Crouched Doubled up Contracted Contracted Crouching (foetal) Contracted 'natural position of sleep' Contracted Contracted Crouched Contracted Crouching NB – Glossary contains no definitions of burial positions	Long barrow Neolithic Early Bronze Age Beaker Early Iron Age Bronze Age Saxon Neolithic Neolithic Neolithic Early Bronze Age Round Barrow Bronze Age Long Barrow
1954	Curwen	Archaeology of Sussex	Knees drawn up Contracted Contracted attitude Contracted	Neolithic Prehistoric (The Trundle) Neolithic/Early Bronze Age Bronze Age (general description)
1954	Piggott	Neolithic Cultures of Britain	Legs lightly flexed, hands on knees Crouched on left Crouched on right Crouched Crouched on left Crouched Crouched Crouched	Neolithic (Windmill Hill) Neolithic (Whitehawk) Neolithic (Whitehawk) Neolithic (Whitehawk)

			Crouched Curled up Considerably flexed on side Crouched Crouched Crouched Crouched	Neolithic (Blackpatch) Neolithic (Blackpatch) Neolithic (Blackpatch) Neolithic (Crichel Down) Neolithic (Whitehawk) Neolithic (Whitehawk) Neolithic (Wiltshire, general description) Neolithic Neolithic (Taddington) Neolithic (Drimnagh) Neolithic (Clava)
1960	Ashbee	Bronze Age round barrows	Contracted $<90^{o}$ Flexed $>90^{o}$	Bronze Age Bronze Age

Table 9: An informal survey of the history of prehistoric burial position terminology

With no established nomenclature at the time prehistoric burials first began to be excavated, it is easy to see how the terms recorded were those used by individuals, originally antiquarians, describing what they saw, often affected by a particular bias, such as interpretation of hands being in an apparent praying position, for example as illustrated in *Notes on Prehistoric Burial in Sussex* (Smith, 1870:70), shown in Figure 4.10 below, described as, '…on its left side doubled up, the knees drawn up towards the chin…'. The use over long periods of time of different terms by various excavators, apparently describing similar burial positions, seems to have perpetuated the use of interchangeable terms and inconsistency, in particular in the use of 'crouched', 'contracted' and 'flexed', along with other variations, such as the one just described.

Figure 4.10: Depicted burial position of a round barrow burial from Alfriston, Sussex (Smith, 1870:70)

Table 10 gives a summary of some attempts to standardise the burial position descriptors used in archaeological excavation and literature (Ashbee, 1960:69; Brothwell, 1981:2; Perrot *et al.*, 1988; Parker Pearson, 1999; Sprague, 2005; Byers, 2010:82; Knüsel, 2014; BAJR, 2005:3). These have often focussed on describing the position of the body as a whole including the upper and lower limbs, at times using acute and obtuse angles of flexion to differentiate between these (Ashbee 1960:69, Perrot *et al.*, 1988 and Sprague, 2005). Sprague's system is the more detailed overall, specifying degrees of flexion that seem too precise to be practicable and do not appear to take into account the effects of taphonomic processes on eventual position, instead describing the position at the point of excavation as absolute. Knüsel (2014:41) has more recently recommended using standard anatomical nomenclature derived from human movement to describe burial positions when recording during excavation, namely, flexion and extension, abduction and adduction, and so on.

Ashbee (1960:69)	Brothwell (1981:2)	Perrot *et al.* (1988)	Parker Pearson (1999)
Contracted Knees drawn up to the chin Angle in relation to spinal column = 90^{o} or less **Flexed** Angle in relation to spinal column = more than 90^{o} …difference between contracted and flexed is often ambiguous…	**Extended** Laid straight The orientations in a group may vary Sometimes special positioning of arms or head **Flexed** ie laid on one side Arms and legs bent but generally in no special positioning Flexed, semi-flexed or tightly-flexed (the last resembling the foetal position 'where the elbows are drawn into the torso and flexed so that the hands lie against the upper thorax, close to the base of neck') **Contorted** Numerous atypical positions, perhaps buried in haste or after *rigor mortis* has set in **Other** e.g. tightly bound	**Crouched** Joints of lower limbs at angle of more than 90^{o} to the trunk (sitting or squatting position)	**Supine** Lying on back **Prone** Lying on front **On side** Left or right **Extended** Straight **Flexed** Knees bent **Crouched** Knees brought up towards chest **Contracted** Knees up under the chin
Sprague (2005)	**BAJR Field Guide (2005)**	**Byers (2010:82)**	**Knüsel (2014:41)**
Degrees of flexion • body/trunk semi-flexed 180-90^{o} • body/trunk flexed 90-10^{o} • body tightly flexed 10^{o} • knee semi-flexed 180-90^{o} • knee flexed 90-10^{o} • knee tightly flexed 10-0^{o} • reversed knee flexed 180-360^{o}	**Extended** Supine or prone **Flexed** On the side **Crouched** Tightly	**Tightly flexed** The knees drawn up to the abdomen, while the feet are in proximity of the buttocks	Recommends use of standard anatomical nomenclature derived from human movement: • Flexion • Extension • Abduction • Adduction • Rotation • Protraction • Retraction • Supination • Pronation

Table 10: Some definitions of burial descriptors in the archaeological record (after Knüsel (2014) and expanded)

When applying burial position descriptors to skeletons previously excavated rather than *in situ* during excavation, it is generally more difficult to reach that level of detail from photographs and plans alone, depending on their quality, which is variable. Therefore, for this dataset, the analysis has focussed on an archaeothanatological assessment of the position of skeletons to interpret their potential original burial position alongside estimation of the angle of flexion of the femur in relation to the spinal column, in order to compare and contrast the original descriptors by using a standardised format.

Figure 4.11 shows the degrees of flexion for the sample group overall and Figure 4.12 and Table 11 show the data broken down by sex and age, and the mean, median and mode.

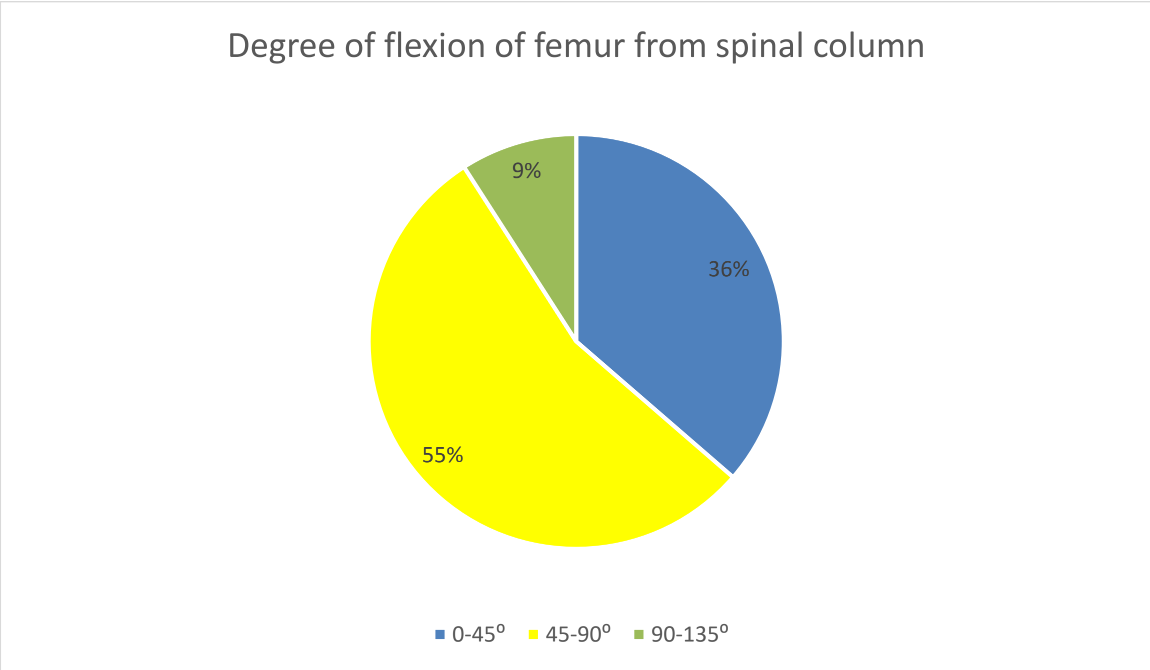


Figure 4.11: Degrees of flexion overall

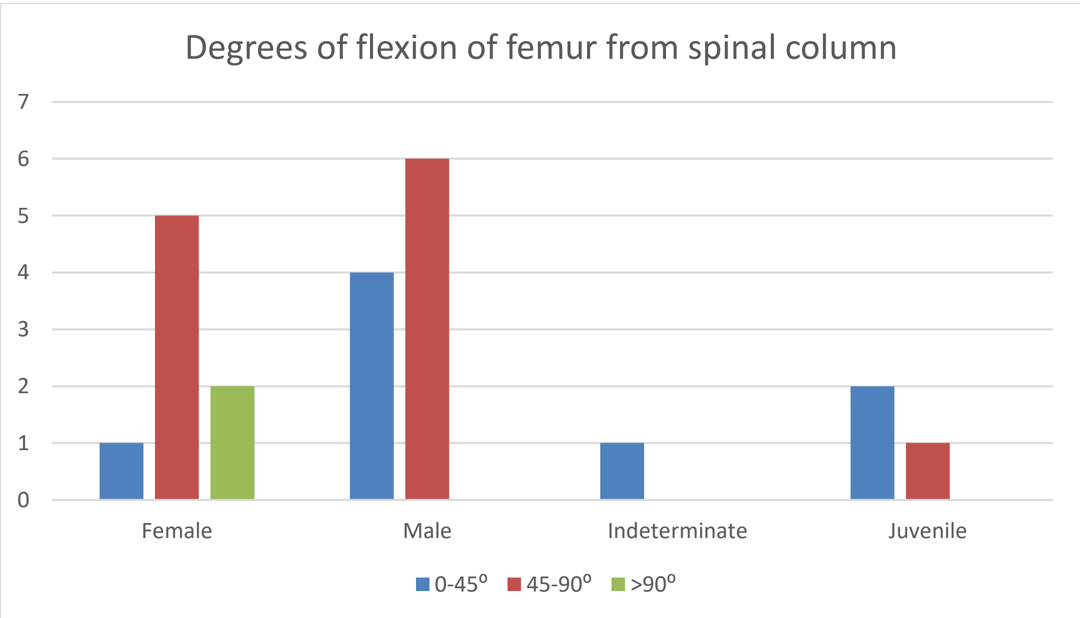


Figure 4.12: Degrees of flexion by sex and age

	0-45^o	45-90^o	>90^o
Sex	n.	n.	n.
F/?F	1	5	2
M/?M	4	6	0
I	1	0	0
J	2	1	0

Table 11: Proportions (n.) of flexion of femur from the spinal column
Averages: Mean = 58.63^o, Median = 52.5^o, Mode = 80^o, 50^o, 40^o, 30^o appear three times, Range = 20^o-130^o

No angles were found to be more obtuse than 135^o in the sample group. The measurements indicate that the femorae of half the skeletons in the sample group were flexed at an angle of between 45^o and 90^o. In addition, in 36% of the skeletons this angle is between 0^o and 45^o which, when added to the previous figure, gives an overall proportion for acutely-angled flexion of 86%, compared to only 14% obtusely flexed. Under Ashbee's system (Ashbee, 1960:69) this equates to the majority of the burial positions being 'contracted' (defined by the dictionary as decreased in size) and a much smaller number of 'flexed' (defined by the dictionary as legs bent or drawn up). When aligned with Brothwell's (1981:2) approach, these figures equate to 14% 'flexed', 50% 'semi-flexed' and 36% 'tightly-flexed'. Perrot *et al.* (1988) would have described the acutely flexed majority as 'crouched', which highlights the French usage of the term 'crouched' to mean 'crouching down' at a time when its meaning in Britain was more vaguely applied to legs being generally flexed or bent to a greater or lesser, unspecified extent. Under Sprague's (2005) system, devised in America, 86% of the individuals in this dataset would be described as 'flexed' and the remainder as 'semi-flexed' based on the angles of the femorae to the spinal column as opposed to the angle of the femorae to the tibiae/fibulae which Sprague's system also measures but has not been attempted in this research.

The original descriptions of burial positions in the sample group range from 'crouched' (64%) to 'flexed' (14%), 'contracted' (4%) and 'semi-prone' (9%). Revised descriptions allocated on the basis of the findings of this analysis are split between 'flexed' and possible 'sitting' only, with degrees of flexion given for the angle between femur and spinal column and the side the skeleton was laid on (in some cases this is the back). When breaking the figures down by age, 84% of adults' legs are acutely flexed and 16% obtusely, and all juveniles' legs are acutely flexed. When compared by sex, the females in the sample are more commonly found to have their legs flexed at 45-90^o with an overall figure for acute angled flexion of 87.5% and 12.5% obtusely flexed, with similar figures of 80% and 20% for males. The only individuals with flexion of more than 90^o are female. The mean and median figures for the sample group overall are 58.63^o and 52.5^o, respectively, falling within the acutely flexed range.

In addition to differences in original burial position descriptors resulting from inconsistent use of terminology, archaeothanatological analysis of the archival records reveals a number of instances where the recorded position is at odds with the anatomical evidence. These are summarised in Table 8 and further details are given in the individual archaeothanatological assessments attached at Appendix 5. A number of individuals in the dataset appear to have been buried on their back with their limbs having later fallen to the side, for example skeletons 1 and 2 at Nutbane long barrow, skeleton 7581 at Staines causewayed enclosure, the non-monumental skeleton 2079 from Monkton Minster and F602 from the oval barrow Mount Farm. Evidence for this comes from the position of the spinal column and the rib cage having fallen inferiorly. Furthermore, two of the individuals from Park Farm barrow appear to have been originally placed in a sitting position, later falling to the side, resulting in their recorded burial position as 'tightly crouched' on their sides. Two individuals from Wayland's Smithy (WS1 and WS2) also have the appearance of original placement in a sitting position. These are discussed further in Chapters 5 and 6.

A further category of anomaly is that of the two female adults from Whitehawk causewayed enclosure, described as having been 'semi-prone'. One (Skeleton I) was found within the occupation layer of a ditch with her shoulders and chest recorded as being 'prone with the right hand in front of the abdomen with some finger bones imbedded in mud adhering to the front of the lumbar vertebrae and the left arm nearly straight laying behind her back behind the semi-prone pelvis' (Curwen, 1934:108). The second Whitehawk individual (Skeleton II) was buried with more care in a discrete grave surrounded by chalk blocks within a ditch, the position described as 'semi-prone on the right, with the lower jaw resting on the right upper arm, right elbow bent to a right angle, forearm and hand pointing down towards the knees, with shoulders and chest prone, left hand near the face, hips and knees flexed but not strongly'; significantly, the remains of a neonate were found between her left elbow and knees (Curwen, 1934:108). Whereas the position of Skeleton I may well result from the individual having fallen or been thrown into the ditch ante-, peri- or post-mortem, the position of Skeleton II clearly results from deliberate placement in the defined grave. It is possible, if this individual died during or shortly after the time of childbirth as concluded by the excavator (Tildesley in Curwen, 1934:125), if the neonate was *in utero* at the time of burial or placed post-mortem, that during decomposition the enlarged, pregnant abdomen could have resulted in slumping to the 'semi-prone' position described from an originally flexed position on her side. In addition to the two Whitehawk 'semi-prone' burials, a female estimated to have been aged 14-17 years has recently been excavated from the ditch of a newly discovered Early Neolithic monument in Berkshire, and described by the excavator as being 'flexed and predominantly prone but resting on the right side with the arm partly behind the back' (McKinley, 2018). However, the excavator's interpretation is that the articulated remains had been manipulated, including removal of the cranium and left femur and were probably not in their original location or position, and there was no observable grave cut (McKinley, 2018). Further, more detailed consideration of the archaeothanatological findings is discussed in Chapters 5 and 6.

Burial orientation

The recorded orientations of burial positions for females and males are summarised in Figure 4.13. These describe the cardinal or inter-cardinal orientation point of the head first, followed by the feet. It should be noted that burial orientations recorded in the excavation literature are not always done this way and that there is sometimes inconsistency in both the amount and type of data recorded, and occasionally there are errors. Appendix 7 summarises the original recorded data for burial orientations in the dataset alongside the author's summary using consistent terminology and data derived from excavation reports and plans. Two of the excavation reports, namely for Nutbane (de Mallet Morgan, 1959) and Itchen Farm (Lewis and Preston, 2012), demonstrate discrepancy between the descriptions of the burial orientations in the main text and that in the human remains reports, presumably due to editing errors at the point of publication. Another point of note is that the original orientations in the excavation report for Barrow Hills (Barclay and Halpin, 1999) apply specifically to the grave cut itself rather than the body buried within it and this has been adjusted accordingly.

In the database, females were orientated most often north-to-south with some recorded as south-to-north, east-to-west and north-west-to-south-east. Males were orientated mostly south-to-north, followed by east-to-west and south-west to north-east with instances of most other orientations.

When analysing the orientations by age group (Figure 4.14), adult burials are most frequently south-to-north, followed by east-to-west and north-to-south with some instances of south-west-to-north-east and north-west-to-south-east, and south-east-to-north-west. When juveniles and infants are combined as one sub-adult group the orientations are mostly south-to-north with instances of juveniles orientated south-to-north, south-west-to-north-east, north-to-south, and infants orientated mostly south-to-north as well as east-to-west and west-to-east.

Some reports record the cardinal point the individual's face was looking towards (see Figure 4.15). Those where the other details of orientation and the side on which individuals were buried were available were also recorded as facing in a particular direction as logically inferred. Overall the highest proportion of individuals faced east (33%), followed by south and west (both 14%). Females most commonly faced west, then east; males mostly faced east, then south. Adults mostly faced east, then south. Juveniles and infants combined faced most often to the east.

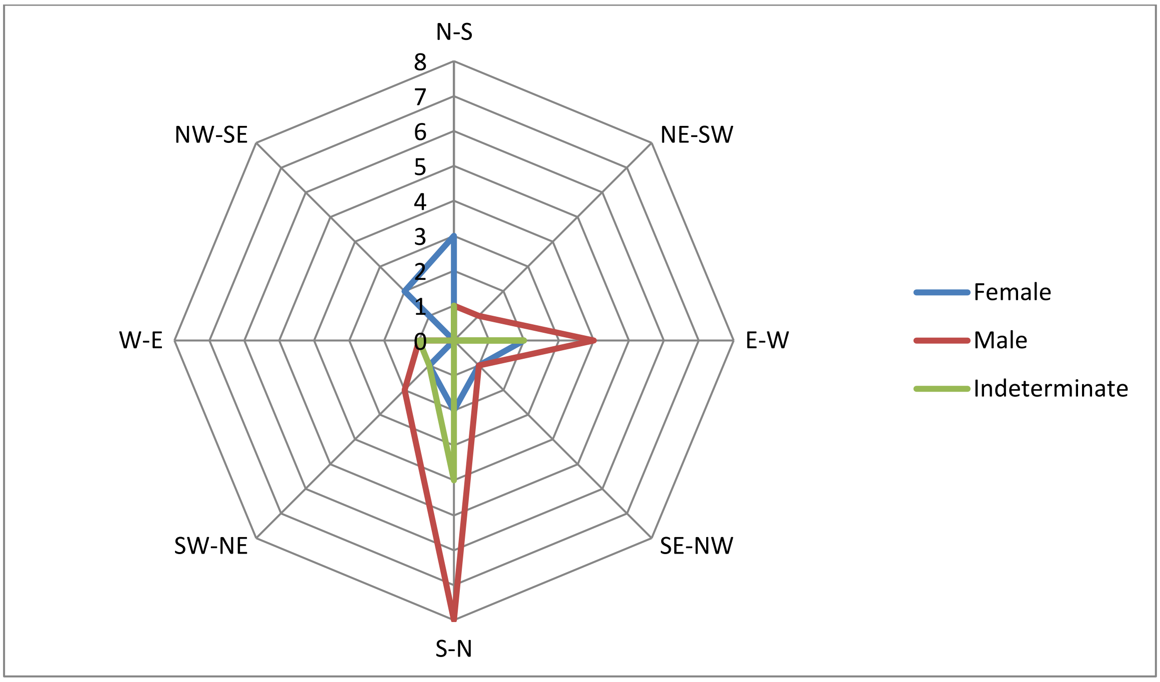


Figure 4.13: Recorded burial orientations by sex

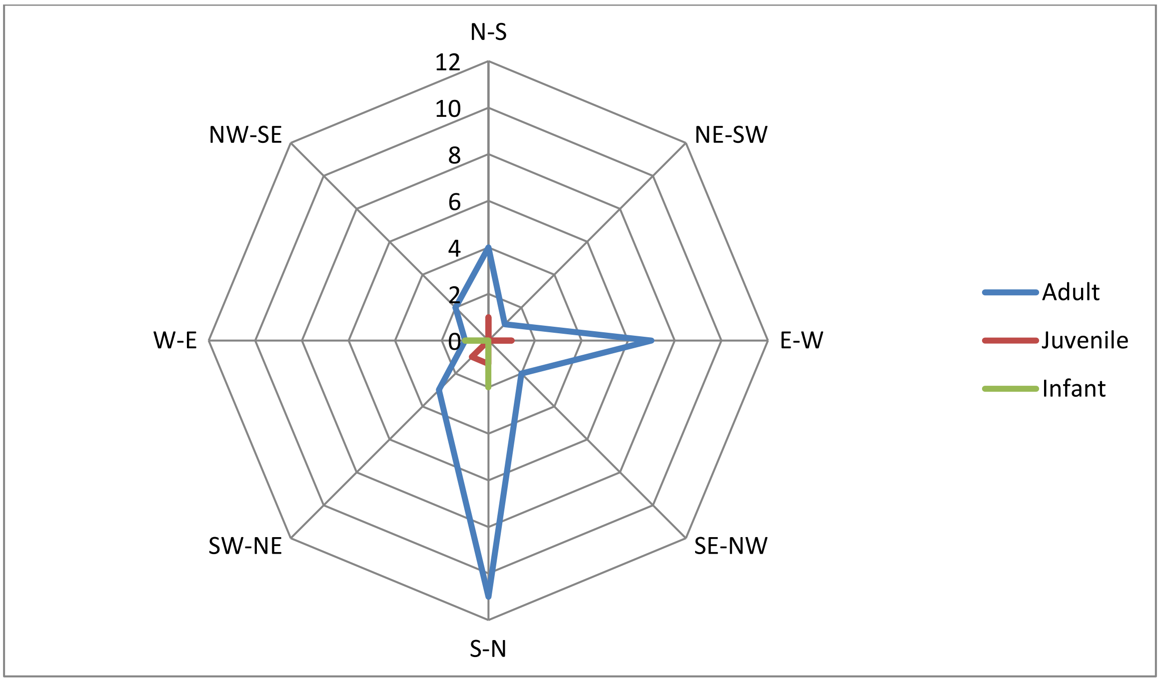


Figure 4.14: Recorded burial orientations by age group

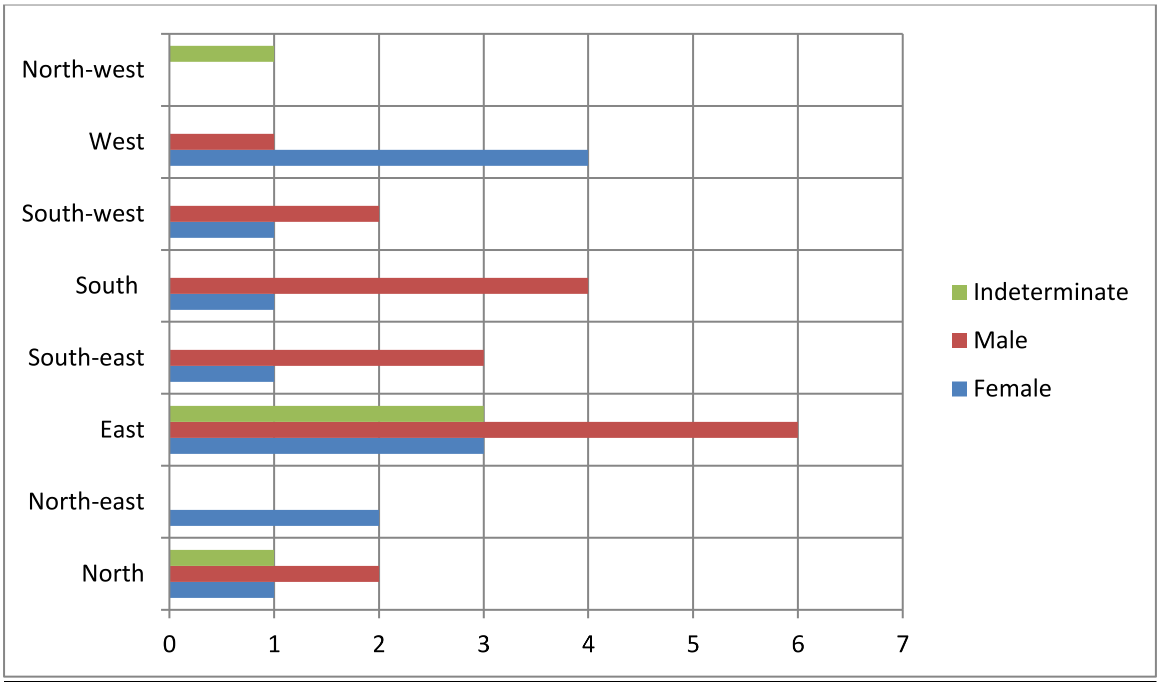


Figure 4.15: Cardinal points individuals faced towards by sex

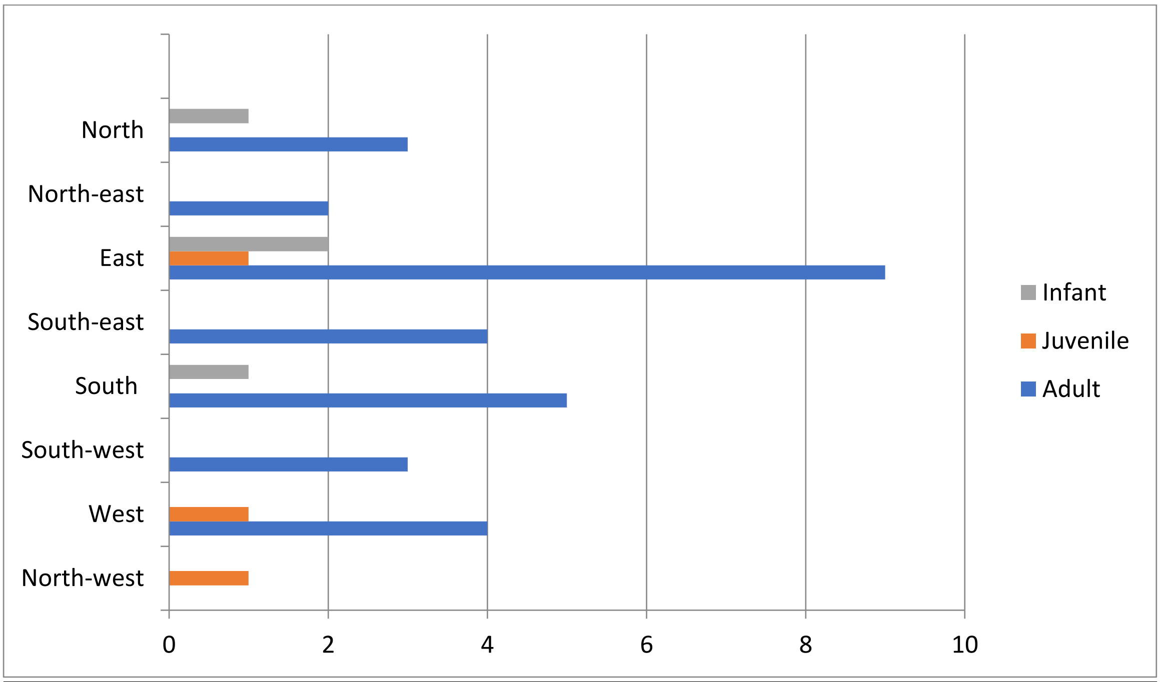


Figure 4.16: Cardinal points individuals faced towards by age group

The side of the body individuals were lying on in their grave, where recorded (or inferred from the burial orientation), is summarised in Table 12. This shows that females were buried on their left side (55%) more often than their right (45%) whereas males were more often buried on their right (65%) than their left 35%). Overall adults were buried on their right (57%) more often than their left (44%).

With one exception, both juveniles and infants were only buried on their right sides. Burial orientation is discussed in more depth in Chapters 5 and 6.

	n.	Lying on left n.	%	Lying on Right n.	%
Male	17	6	35	11	65
Female	11	6	55	5	45
Indeterminate	7	1	14	6	86
Adult	28	12	43	16	57
Juvenile	3	1	33	2	67
Infant	4	0	0	4	100

Table 12: Side of the body individuals were lying on

<u>Grave goods</u>

The analysis of grave goods, encompassing associated finds, is based upon locations where these were found (Figure 4.17) and type of artefact (Figure 4.18), broken down by sex and age. Overall, they were found in the greatest quantities at causewayed enclosures (29%), then non-monumental locations (26%), closely followed by long barrows (24%). At causewayed enclosures, most grave goods were with female burials (45%), however, at long barrows and non-monumental burials males were more often found with grave goods (33% and 40% of grave goods found at these locations, respectively, where a proportion were of indeterminate sex).

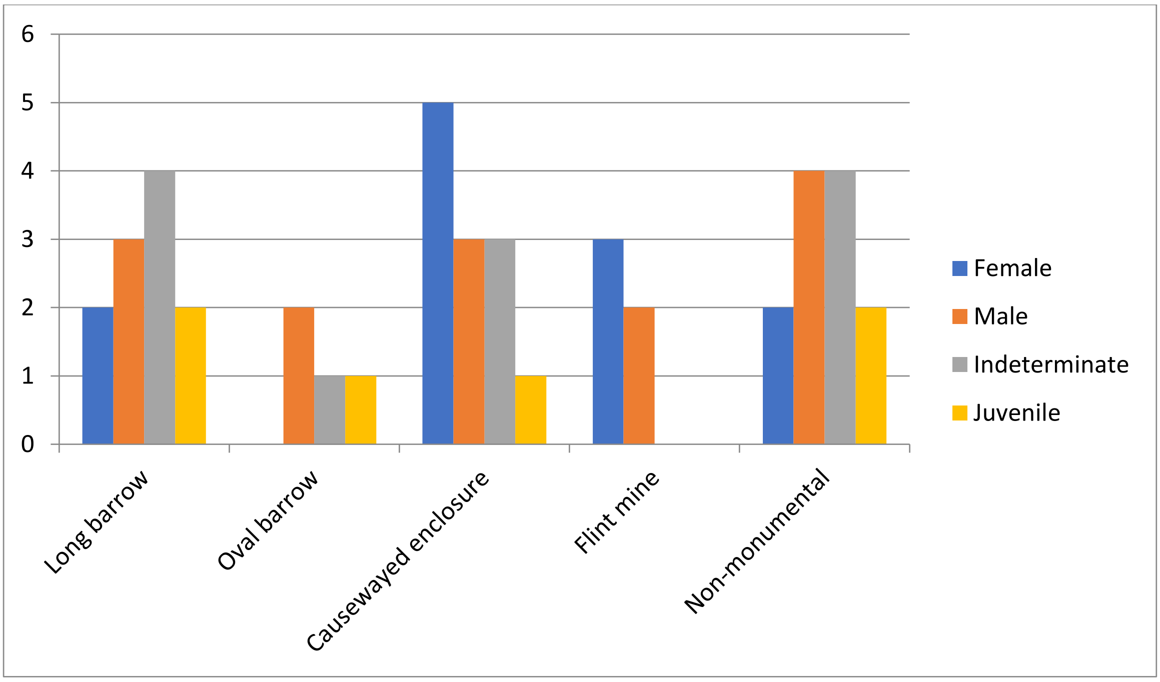


Figure 4.17: Locations where grave goods/associated finds were found with burials by sex and age group

For this study, grave goods were grouped into axes, arrowheads, other flint implements, decorated chalk, shells, pottery, bone implements and animal bones; the data is summarised in Appendix 2. It should be noted that some burials contained more than one artefact type. Pottery and animal bones were the most commonly occurring items overall, each at 23%, followed by other flint implements at 18%. Table 13 gives a breakdown by category of the locations where artefacts have been found with burials. Animal bones and flint implements are found at all locations, however, in the study dataset there are some types of artefact that are limited in their distribution. Fossils have only been found with articulated burials at causewayed enclosures and in association with the commingled assemblage at a long barrow, and decorated chalk only appears with articulated burials at causewayed enclosures and flint mines. Flint arrowheads are found at long barrows, flint mines and with non-monumental burials, while flint axes are only found with burials at flint mines and non-monumental locations. Pottery is found with burials at long barrows, causewayed enclosures and non-monumental sites. The only case of a specifically identified bone implement is an antler comb with a non-monumental burial. Regionally, decorated chalk is found in the mid-southern and south-eastern counties of West Sussex, East Sussex and Kent only, while leaf-shaped arrowheads are found with burials in East Sussex, West Sussex, Surrey and Oxfordshire. Fossilised sea urchins are predominantly found with burials in East Sussex, with an exception in this dataset in a commingled assemblage at Ascott-under-Wychwood long barrow at Oxfordshire, although its association with a particular burial is unclear.

Artefact type	**Long barrow**	**Oval barrow**	**Causewayed enclosure**	**Flint mine**	**Non-monumental**
Animal bone	X	X	X	X	X
Arrowhead	X			X	X
Other flint implement		X	X	X	X
Fossils	X		X		
Decorated chalk			X	X	
Shells			X	X	X
Pottery	X		X		X
Bone implement					X
Axe				X	X

Table 13: Locations of grave goods/associated finds by category

Taking the artefact types in turn, of those individuals for which it was possible to estimate sex, the proportions found with males and females are shown in Figure 20 and Table 14. This shows that male burials contained artefacts from all but one category, the exception being fossils which were only found with female and immature burials. It should be noted that, for obvious reasons, these figures exclude the individuals of indeterminate sex. Juveniles were only found with grave goods in 11% of instances, the vast majority (89%) of grave goods being placed with adult burials.

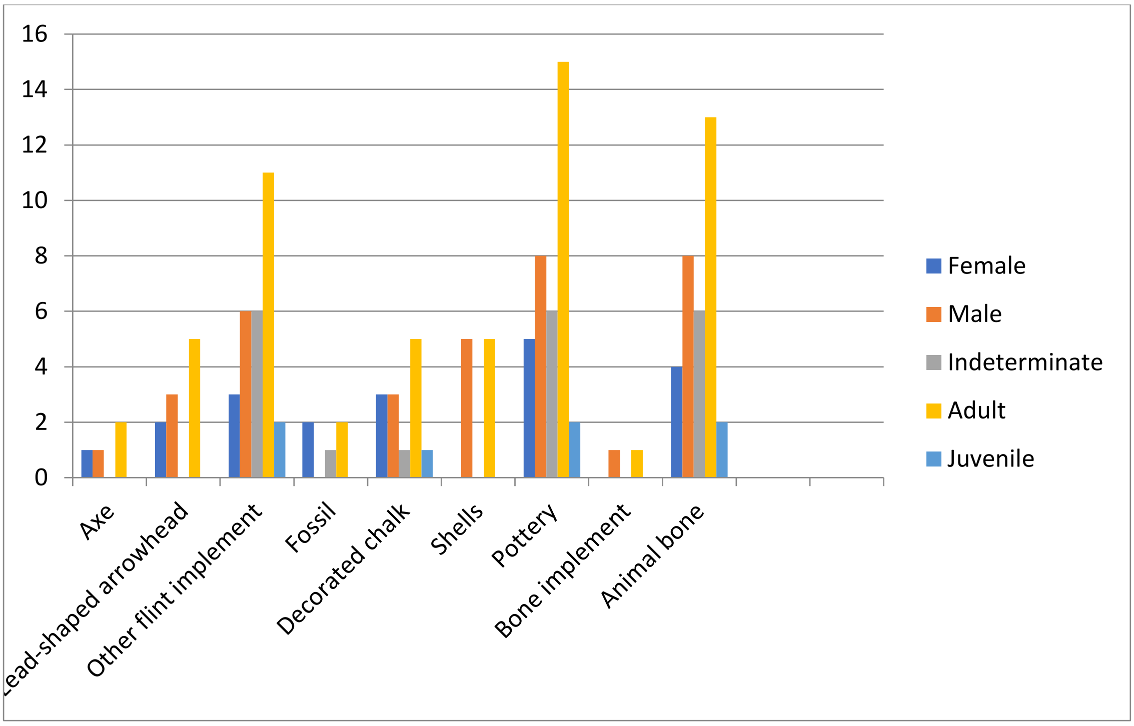


Figure 4.18: Types of grave goods/associated finds by sex and age group

Artefact type	Female n.	Female %	Male n.	Male %
Axe	1	50%	1	50%
Arrowhead	2	40%	3	60%
Other flint implement	3	33%	6	67%
Fossils	2	100%	0	0%
Decorated chalk	3	50%	3	50%
Shells	0	0%	5	100%
Pottery	5	38%	8	62%
Bone implement	0	0%	1	100%
Animal bone	4	33%	8	67%

Table 14: Proportion of grave good types by sex

Further interpretation of grave goods and their demographic associations is discussed in Chapters 5 and 6.

Pathology

Analysis of pathology and trauma was not a primary aim of this research, however, as stated in the methodology in Chapter 3, its presence has been noted during the course of the data gathering process. The pathological conditions identified during the author's personal assessments of skeletal remains along with those obtained from secondary sources are summarised by category in Table 15.

Dental	Antemortem tooth loss	**Metabolic**	Osteoporosis (possible)
	Dental attrition		
	Tooth extraction (possible)	**Congenital**	Persistent metopic suture
	Wear		Wormian bones
	Calculus		Sacralisation
	Alveolar recession		Spina bifida occulta
	Caries		Supernumerary ribs
	Abscesses		Septal aperture to humerus
	Dental infection?		Palatine torus
	Enamel hyperplasia		
	Calculus	**Infection**	Inflammatory disease to vertebrae
	Periodontal disease		Cribra orbitalia
Joint	Osteoarthritis	**Neoplasia**	Odontona
	Degenerative joint disease		
		Misc	Squatting facets (historic term)
Trauma	Schmorl's nodes		
	Myositis ossificans traumatica		
	Ankylosis		
	Fused lumbar vertebrae		
	Healed fractures		
	Unhealed fractures		
	Gnawing marks		
	Cut marks		

Table 15: Summary of pathology noted during the research

In their review of health and disease in Britain from the prehistoric period onwards, the pathology identified by Roberts and Cox (2003) for the Neolithic period largely aligns with the findings of the current research and identifies the following conditions:

- Dental disease: enamel hyperplasia, caries, calculus, abscesses, antemortem tooth loss, periodontal disease
- Joint disease: osteoarthritis, Schmorl's nodes, degenerative joint changes to spine, lower body, upper body, temporomandibular joint, rib
- Trauma: joint disease, healed and unhealed fractures, unhealed cut marks
- Metabolic: osteoporosis
- Congenital disease: premature suture closure, sacralisation, club foot
- Non-specific infections: periostitis, osteitis, meningitis, anaemic changes
- Neoplasia: osteoma
- Infectious disease: meningitis (possible), poliomyelitis (possible), osteochondritis dissecans

There are, however, some examples of pathological conditions noted during the course of this research that were not included in Roberts and Cox's discussion on the Neolithic period, namely persistent metopic suture, wormian bones, supernumerary rib, septal aperture, palatine torus, spina biffida occulta, myositis ossificans traumatica (or osteoma) and odontoma. These are discussed in more detail in Chapter 6.

County summaries

As mentioned in Chapter 3, the study area data has been organised by the modern statistical counties of south-east England. For the purposes of regional analysis, the data for each county in the dataset is briefly summarised below, ordered by the physiographic units of the South Downs, North Downs, and Wessex Downs and Chilterns. The data (itemised in Appendix 2) is broken down proportionally by sex and age for burial locations, positions, orientations and grave goods. Figure 4.19 shows a map of the counties of south-east England used in this study.

Figure 4.19: The counties of south-east England used in the research
(http://www.picturesofengland.com/mapofengland/south-east-map.html)

South Downs

East Sussex

Burial data for East Sussex comes from the causewayed enclosures at Offham, excavated in 1976 (Drewett, 1977) and Whitehawk, excavated in 1929, 1932 to 1933 and 1935 (Ross Williamson, 1930; Curwen, 1934 and 1936) and the flint mines at Blackpatch (Russell, 2001b).

Articulated burials in East Sussex are equally split between female (n.2) and male (n.2) individuals with slightly more disarticulated males (n.2) than female (n.1). Articulated burials are mostly adults (n.4 of 6), likewise disarticulated (n.9 of 11).

Causewayed enclosures are the most common location for both articulated and disarticulated burials, followed by flint mines. The most frequently recorded burial position is 'contracted', followed by 'semi-prone' (n.2), then 'crouched' (n.1) and 'curled up' (n.1). More individuals were found lying on their right (n.4) than left (n.1) and half the burials recorded were facing east (n.3), north (n.1) or north-east (n.1). Grave goods were found at causewayed enclosures and flint mines only.

<u>West Sussex</u>

The burial data for West Sussex covers a causewayed enclosure at Bury Hill, excavated in 1979 (Bedwin, 1981), an oval barrow at North Marden, excavated in 1982 (Drewett *et al.*, 1986), and a flint mine at Cissbury (Rolleston, 1878; Willet, 1880; Park Harrison, 1877a, 1877b and 1878).

Of the small assemblage for West Sussex, there is one more articulated female (n.3) than male (n.2) with an estimated sex for only one of the disarticulated group, a male. Nearly all the disarticulated burial deposits are adults (6 of 7). Articulated burials are all from flint mines, one male and two female individuals. Disarticulated individuals are mostly from an oval barrow and also a causewayed enclosure, mostly of indeterminate sex.

The most common burial position descriptor is 'contracted' (n.3), followed by 'flexed' (n.2). The West Sussex burials are orientated south-to-north (n.2), followed by north-to-south (n.) and south-east-to-north-west (n.1), and the individuals were nearly always laid on their left sides (n.4 of 5), mostly facing east (n.3), with instances of facing west and south-west. Grave goods/associated finds are at flint mines only.

<u>Hampshire</u>

In Hampshire, the burial data comes from long barrows at Nutbane (de Mallet Morgan, 1959) and Barton Stacey, as well as from recent excavations at Itchen Farm, Winchester (Lewis and Preston, 2012).

Articulated burials in Hampshire are mostly male (n.3), with the remainder being of indeterminate sex, two of which are children, and there are more disarticulated females (n.2) than males (n.1) of those sexed. When all Hampshire burials are combined, there are more males (n.4) than females (n.2) and a similar proportion of indeterminate sex (n.5). Both articulated and disarticulated burials are mostly adults (n.3 and 4, respectively).

Long barrows are the most common burial location in the Hampshire data, the only other type being non-monumental. All burials are recorded as 'crouched' with east-to-west being the most common orientation, followed by south-to-north. The instances of individuals being laid on their right and left sides are fairly equal and they are mostly recorded as facing south or east. Grave goods are found with the non-monumental burial only.

North Downs

Surrey

The Surrey burial data comes from causewayed enclosures at Staines, excavated between 1961 and 1963 (Robertson Mackay, 1987) and Staines Road, Shepperton, excavated in 1989 (Jones, 1990), and a non-monumental burial found at Whyteleafe in 1896 (Hogg, 1906).

The articulated burials for Surrey comprise two adult females at causewayed enclosures. The disarticulated human remains are also from causewayed enclosures and those sexed comprise slightly more females (n.3) than males (n.2), and most (n.8) are adults along with one infant.

Burial descriptors used for Surrey are 'crouched', 'flexed' and 'contracted'. Orientations are north-to-south, north-west-to-south-east and east-to-west, with an equal proportion of burials lying on either left or right. There are associated finds with articulated burials at causewayed enclosures and with disarticulated human remains at causewayed enclosures and a non-monumental burial.

Greater London

The data for Greater London comes from the non-monumental site at Yabsley Street in Tower Hamlets, excavated in 2004 (Coles *et al.*, 2008) and a skull from the river Thames found at Battersea (Bradley and Gordon, 1988; Edwards *et al.*, 2010).

Both burials recorded for Greater London are from non-monumental locations and comprise one articulated adult female and one disarticulated adult female. The articulated female was recorded as being in a 'crouched' position, orientated east-to-west, lying on the left and facing south and was buried with grave goods.

Kent

In Kent the burial data comes from a range of site types comprising the long barrow at Coldrum, originally excavated in 1910 and recently reassessed (Bennett, 1913; Keith, 1913; Ashbee, 1998; Wysocki *et al.*, 2013), the recently excavated causewayed enclosure at Chalk Hill (Shand, 2001; Fisk, 2003; Clark *et al.*, 2019) and non-monumental sites at Monkton Minster excavated between 1994 and 1995 (Bennett *et al.*, 2008) and Nethercourt Farm, found in 1949 (Dunning, 1966; Bennett *et al.*, 2008).

Both articulated burials in Kent are male adults. Of the sexed disarticulated individuals, there are an equal number of male (n.5) and female (n.5) individuals and most are adults (n.13) with fewer sub-adults (n.7 infants). When all burials are combined, most sexed individuals are male (n.7), with fewer females (n.5), most are adults (n.15) with fewer sub-adults (n.7 Infants). The articulated male adults are from non-monumental locations; disarticulated burial deposits are mostly in long barrows, followed by one adult and one infant at a causewayed enclosure, and one adult in a non-monumental burial.

The only burial position descriptor used is 'crouched', applying to two male adult burials. Burial orientations are recorded as east-west, and north-east-to-south-west, one male adult is recorded as lying on his left side and another on his right; one male adult was facing south-east, the other to the north. Grave goods are recorded for two male adults in non-monumental burials.

Wessex Downs and Chilterns

<u>Berkshire</u>

The data for the Berkshire burials comes from a range of site types. There are human remains from the Park Farm round barrow at Lambourn, excavated between 1978 and 1979 (Richards, 1990a) and the long barrow at Lambourn (Case, 1957; Wymer, 1966; Schulting, 2000), as well as from non-monumental sites at Farmhill, Pangbourne (Piggott, 1929), Hoveringham, near Bray (Ford, 1987), and Eton Wick (Allen *et al.*, 2013). A very recent but significant addition to the record are an articulated burial and a skull from an Early Neolithic monument in Berkshire (McKinley, 2018).

The articulated burials in Berkshire comprise three adults (two female and one male) and two juveniles, one of which has been sexed as female (McKinley, 2018). For the disarticulated burials, of those individuals for whom sex has been estimated, most are male (n.4) and only one is female. When all burials are combined, more are male (n.5) than female (n.3), and more are adult (n.10) than sub-adult (n.2 juvenile). More than half of articulated burials are in a round barrow with an equal split of the remainder in a causewayed enclosure and non-monumental location. Half of the disarticulated/fragmentary remains are from non-monumental locations with long barrows the next most common with the remainder split equally between a causewayed enclosure and a round barrow.

The predominant burial position descriptor in Berkshire is 'crouched', applying to two adults (a male and a female) and one juvenile, with one case of 'semi-prone' applied to a juvenile. The most common burial orientation is south-west-to-north-east, for the three 'crouched' burials, with one instance of a juvenile orientated north-to-south. There are two instances of burial on the right side (an adult male and an adult female) and one juvenile was buried on the left side and another on the right. The juvenile on its left also faced north-west and the juvenile on the right faced west; the adult male and adult female faced south-east. Grave goods/associated finds were found with a non-monumental articulated burial and an articulated burial at a round barrow as well as with disarticulated individuals buried at a long barrow and a non-monumental location.

<u>Oxfordshire</u>

Oxfordshire is the county with the largest group of burial data which spans all the different categories. The burials are predominantly from the long barrows at Ascot-under-Wychwood, excavated in 1965 and recently reassessed (Benson and Whittle, 2007), Wayland's Smithy, excavated between 1919 and 1920 and 1962 and 1963 (Whittle, 1991) and reassessed more recently (Wysocki *et al.*, 2007), and Lyneham, excavated in 1894 (Conder, 1895). There are further burials from Barrow Hills, excavated in 1976 (Bradley, 1992; Barclay and Halpin 1999; Hey *et al.*, 2016), the oval barrow at Mount Farm excavated between 1977 and 1978 (Lambrick *et al.*, 2011), the causewayed enclosure at Abingdon excavated in 1983 (Leeds, 1927 and 1928; Case and Whittle, 1982; Bradley, 1986 and 1992), and the non-monumental burial from excavations between 1989 and 1998 at Yarnton (Hay *et al.*, 2016).

The majority of the articulated burials are adults (n.11) and male (n.9) with only two females, one juvenile and one infant. The figures for disarticulated burials again show adult dominance (n.28) compared to sub-adults (n.4 juveniles and n.3 infants). Of the disarticulated burials for which it was possible to estimate sex, more are male (n.10) than female (n.6). When all burials are combined, most are adult (n.38), with small numbers of juveniles (n.6) and infants (n.4) and of those individuals where sex was estimated, more are male (n.19) than female (n.8).

Articulated burials in Oxfordshire are mostly found in long barrows (n.9, mostly male adults), followed by non-monumental locations (n.2), and an oval barrow (n.2 male adults). Disarticulated/fragmentary individuals are, again, largely found in long barrows (n.31) comprising nearly twice as many sexed males as females (n.10 and n.6, respectively) and a high proportion (n.27) of adults. Disarticulated remains are also found at causewayed enclosures (n.3, all infants) and an adult female cremation at a non-monumental location.

Burial positions are recorded as mostly 'crouched' (n.8) with several 'flexed' (n.3). The most common burial orientations are south-to-north, followed by west-to-east. There are single instances of east-to-west, south-east-to-north-west and south-west-to-north-east. Of those where it is recorded, most articulated burials are lying on the right (n. 9 of 11) and most (generally male adults) were facing east (n.4), while some (a male and a female) were facing west, some facing south (two male adults and an infant) and there are single instances of individuals facing north, south-west and south-east, all male adults except for one female facing north. Grave goods were found with adult males at an oval barrow and a juvenile in a non-monumental location, as well as with three disarticulated adults at long barrows (two males and a female).

Buckinghamshire

Buckinghamshire's data comprises the disarticulated human remains of a mature adult male individual from the round barrow at Whiteleaf Hill, excavated between 1934 and 1939 (Childe and Smith, 1954; Farley, 2000).

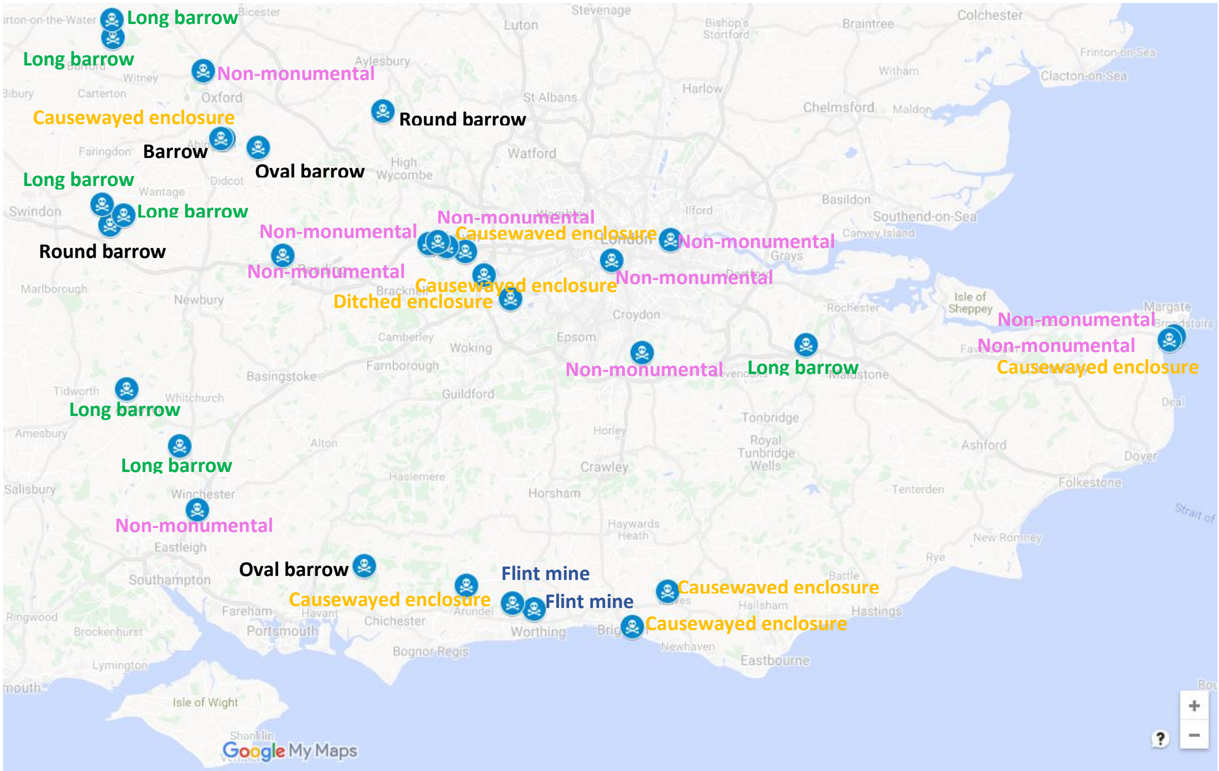


Figure 4.20: Distribution map of burial location types across the region

Figure 4.20 shows the distribution of Early Neolithic burial location types across the south-east region, which illustrates certain regional differences. With the exception of Coldrum in Kent, all the long barrow burials are situated in the west of the region. The same pattern also applies to oval and round barrows, which are all in the north-west, in the Wessex Downs except for the oval barrow at North Marden in the South Downs. Causewayed enclosures with burials are found in two clusters, one in the Wessex Downs and the other in the South Downs, in East Sussex and West Sussex, with one isolated exception in east Kent. Flint mines with burials are only found in West Sussex in the South Downs. Non-monumental burials are largely in the northern half of the region, with the one exception being the child burial at Itchen Farm in Hampshire. It is noticeable that the greatest density of burial sites is on the Wessex Downs and that there is a swathe of landscape where no Early Neolithic burials are recorded through the southern half of the region across the Weald, from Kent in the east, passing north of the South Downs to east Hampshire in the west.

Figure 4.21 shows articulated and disarticulated burial deposits across the region by sex, where this has been possible to estimate. This indicates that in the Wessex Downs area, where the concentration of locations with burials is highest, there are more articulated and disarticulated males than females. However, in the North Downs this situation is reversed and in the South Downs the proportions are very similar for both sexes. This aligns with a previously identified dominance of male burials in long barrows (Thorpe, 1984) and indicates that other monument types and the regional areas in which they are located represent a more even split between the sexes, as is found in this research (see Chapter 6) for causewayed enclosures, in particular.

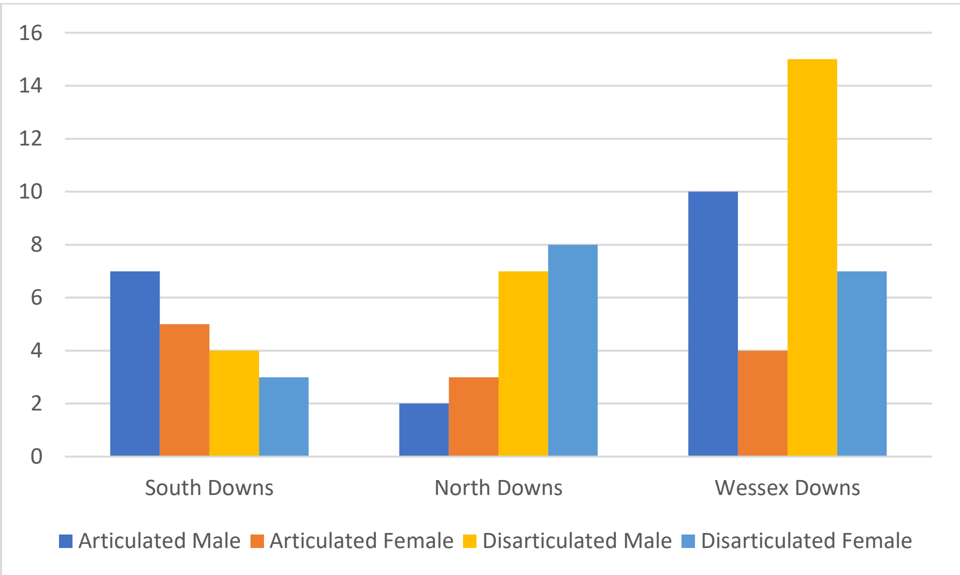


Figure 4.21: Regional comparison of burials by sex

Overall, during the 700 years of the Early Neolithic period, which roughly equates to 21 generations of human occupation in the region, burial deposits were being made at long, oval and round barrows, causewayed enclosures, flint mines, and non-monumental locations. In addition to the findings outlined in the current chapter, further detailed analysis of the demographic and temporal factors relating to the utilisation of these burial locations is detailed in Chapters 5 and 6.

CHAPTER 5 – A SYNTHESIS OF THE EVIDENCE FOR BURIALS IN THE DATABASE BY LOCATION TYPE

The following detailed analyses synthesise the multifactorial evidence for the burial assemblages in the study to facilitate demographic analysis of their burial locations, positions, orientations and association with grave goods. The studies are grouped by location type, namely barrows, causewayed enclosures, flint mines and non-monumental locations, and the individual sites are shown on the map at Figure 3.1, Chapter 3. Overall summaries of the demographic data and radiocarbon dates referred to throughout are summarised in Appendices 1 and 3, the skeletal assessment forms are to be found in Appendix 4 and the archaeothanatology assessment forms are at Appendix 6.

Barrows

There are three types of barrow in the database: long, oval and round. While long barrows are archetypal monuments of the Early Neolithic period, oval and round barrows are more transitionary and straddle both the Neolithic and Bronze Ages. The barrows with human remains included in this study have mostly been directly – although some relatively - dated to the Early Neolithic and their temporality is discussed in more detail in Chapters 4 and 6. The long barrows of Early Neolithic south-east England comprise several with small burial assemblages, at Barton Stacey and Nutbane in Hampshire and Lambourn in Berkshire, and those with multiple, largely disarticulated human remains at Wayland's Smithy in Berkshire, Ascott-under-Wychwood in Oxfordshire and Coldrum in Kent.

Barton Stacey

The Moody's Down south-east long barrow at Barton Stacey Camp in Hampshire was, unfortunately, destroyed in the Spring of 1940 with no prior warning during the construction of a Ministry of Defence rifle range (Grinsell, 1939:201; Grimes, 1960:248-9; RCHME, 1979:3-7). The record which exists results from subsequent investigation by the Inspector of Ancient Monuments based on witness accounts and retrieval of the human remains themselves. The archive, which is held by the Hampshire Cultural Trust, includes an outline of the sequence of events in the form of correspondence between the Inspector of Ancient Monuments, Barton Stacey Camp, Hampshire Field Club, HM Office of Works and the Ordnance Survey, along with the human remains themselves. Figures 5.1 and 5.2 show the retrospective sketches of the barrow, including the position of burial, drawn by the Inspector of Ancient Monuments.

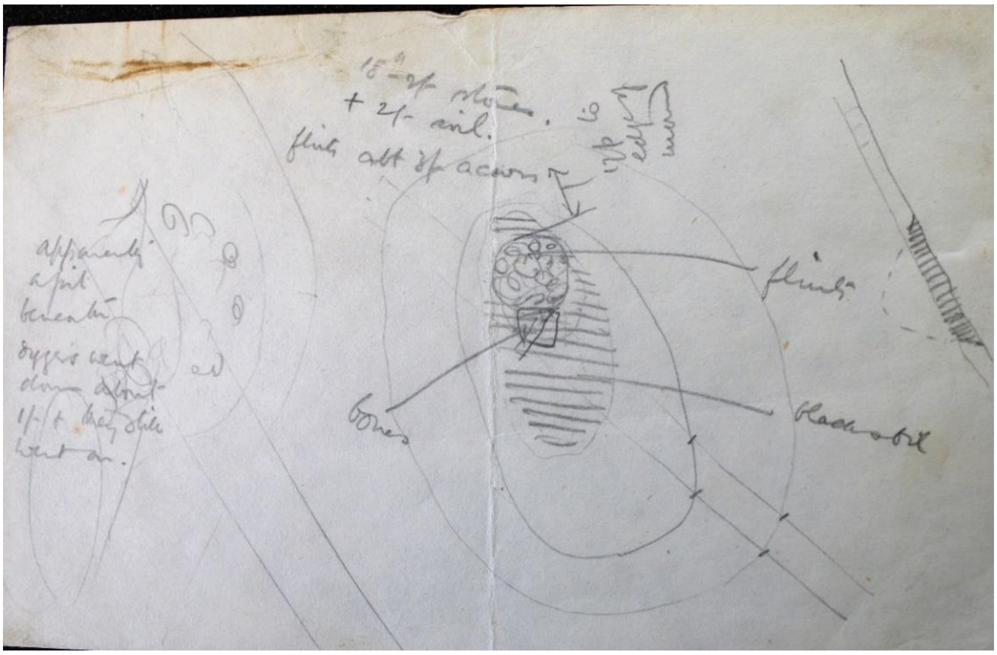


Figure 5.1: Retrospective sketch plan of Barton Stacey south-east long barrow (Photograph: author's, used courtesy of Hampshire Cultural Trust)

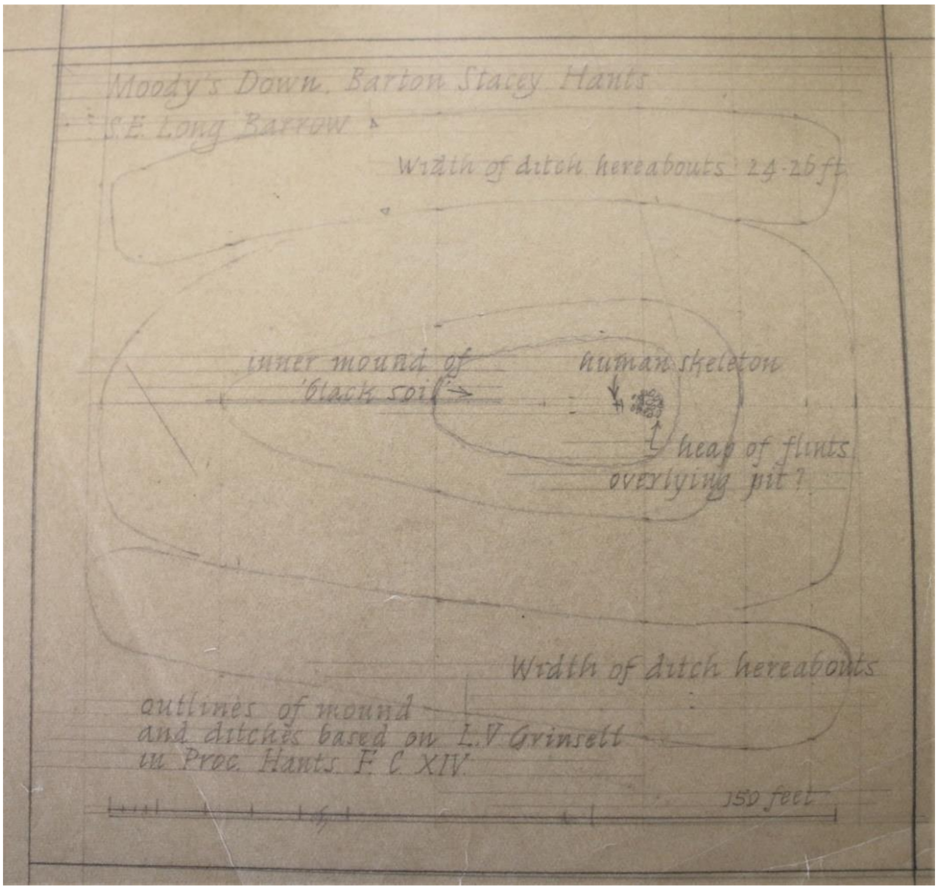


Figure 5.2: Plan of Barton Stacey south-east long barrow (Photograph: the author's, used courtesy of Hampshire Cultural Trust)

Based on the witness accounts of the destruction of the barrow, the Inspector of Ancient Monuments produced a short, two-page report. This refers to Grinsell's description of the barrow as 'pear-shaped' (Grinsell, 1939:200) and describes a heap of flints overlying the pit, to the west of which the human remains were found. These are described as being 'the remains of a skeleton of which the greater part, including a dolicho-cephalic skull, had survived', which was 'probably articulated'.

Also in the archive is a report by Sue Browne, osteoarchaeologist, dated 2002. In common with the author's study for the present research, Browne's conclusion was that the human remains in fact represent a disarticulated assemblage of an MNI of four individuals. In her report, Browne uses the now archaic terms 'mesocephalic', 'platymeria' and 'platycnemia' and describes these as traits 'often seen in individuals from earlier populations'. This analytical approach is still used sometimes in the present day when assessing prehistoric populations (e.g. McKinley, 2015:341-342) and can provide a means of comparison with earlier assessments. The report also notes one instance of pathology in the form of cribra orbitalia to the probable adult female cranium, and the presence of butchery marks on two *Bos* long bones (a humerus and tibia) also recovered from the barrow.

The author's reassessment is largely in agreement with the previous analysis of demography and estimates the remains to represent two adult female individuals, one adult male and a juvenile aged 13-17 years. In addition to the cribra orbitalia already noted, Schmorl's nodes were observed on some thoracic vertebrae.

Although the circumstances of excavation were less than ideal, the data that exists is informative and it is particularly interesting that the burial assemblage comprises the disarticulated remains of several individuals as opposed to a single articulated individual, as was originally thought. It seems likely that there may have been other human bones within the barrow that were lost when it was destroyed but, as it stands, the assemblage probably comprises both adults and at least one juvenile, as well as both biological sexes. Further analysis in the form of radiocarbon dating and aDNA would be desirable, if possible, to maximise the data for this site. Elsewhere in Hampshire there are historic reports of human remains found in barrows, including 'an abundance of bones' at Preston Candover, 'ten or twelve skeletons, some primary burials' at Portsdown, a contracted burial at Houghton Down, and a 'crouched' burial at Kingsclere (RCHME, 1979), none of which, unfortunately, survive in the record.

Nutbane

At Nutbane long barrow, also in Hampshire, four articulated burials were found during excavations in the 1950s (de Mallet Morgan, 1959) within the mortuary enclosure (see Figure 5.3, below). They were sexed as three adult males (Skeletons 1, 2 and 4) and a juvenile (Skeleton 3) and all were recorded as having been in a 'crouched' burial position. The excavation report includes a detailed osteological report and the archive, including photographs, is held by Hampshire Cultural Trust; this has been accessed as part of the current research and this re-examination was largely in agreement with the estimates of sex and age in the original report of two young adult males (Skeletons 1 and 4), a mature adult male (Skeleton 2) and a juvenile aged around 12 or 13 years (Skeleton 3).

The excavator's interpretation was that Skeletons 1, 2 and 3 had been interred contemporaneously and Skeleton 4 was a later insertion, during the process of which the earlier burials had been partially disturbed (de Mallet Morgan, 1959:24). In addition to damage to the skulls of Skeletons 1, 2 and 3, the report mentions that a patella was found within the cavity of Skeleton 2's skull and the right forearm had been moved out of position, while the condition of the bones of Skeleton 4 were described as the least weathered and best preserved of the assemblage. The burials were recorded as having been placed on a layer of brushwood and covered by a thick layer of soil beneath a thin 'crust' cairn of chalk blocks.

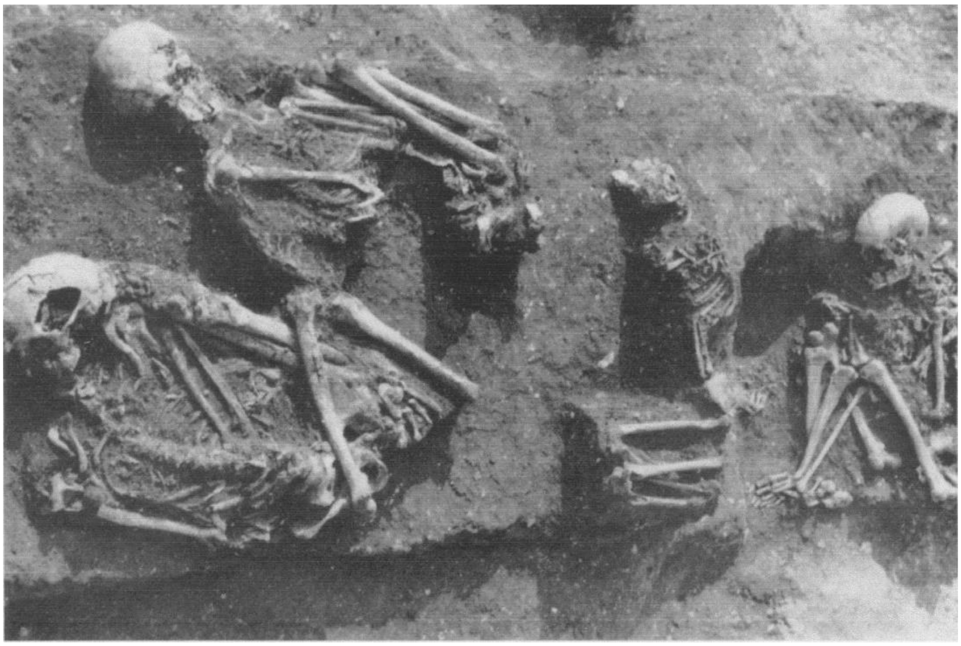


Figure 5.3: The four burials in the mortuary enclosure at Nutbane long barrow: from left to right: Skeletons 1, 2, 3 and 4 (Photograph courtesy of Hampshire Cultural Trust)

Looking at the photographs of the burials *in situ*, it seems the original descriptions of the burial positions as 'crouched on their sides' were intended to convey a position in which the individuals' legs were flexed as they lay on their sides. However, the position of the spine, pelvis, ribs and shoulders of Skeleton 1 indicate that the individual may have been originally lying on his back with the knees flexed. It is also notable that the individual's right foot is absent in the photograph and is also absent from the archive. No indication of trauma to the distal tibia or fibula was observed by the author to indicate the removal of the foot prior to skeletonisation. There are also disarticulated foot and hand bones in the archive with Skeleton 4, labelled as 'unstrat' and 'non-attrit,' (presumably meaning 'unstratified' and 'not attributed') from Pit 923, however, there is no mention of this pit in the report and the hole overlain by Skeleton 4 was recorded as 'Hole IV' and no isolated disarticulated human bones are mentioned as being present.

At the time of excavation, the skull of Skeleton 1 was found to be facing in the opposite direction to the flexed knees, indicating some form of movement, and on the plan the mandible appears to be depicted out of anatomical position to the north of the skull. The excavator noted the skull to be facing backwards and felt it had been moved accidentally by the pallbearers of Skeleton 4's body, post-skeletonisation of Skeleton 1. An alternative explanation, assuming gradual rather than immediate infilling of the mortuary enclosure, may be that, due to the presence of an original support of organic material, when the cranium detached from the cervical vertebrae during the process of decomposition of the atlanto-occipital joint, it fell from its original position. Furthermore, the position of the mandible in relation to the cranium on the plan (see Figure 5.4) is typical of that resulting from the decomposition of a perishable organic element supporting the head (Duday, 2009:47). Also of interest is the position of the clavicles which have moved inferiorly from their original anatomical position. This verticalisation can be the result of transversal compression at the shoulders which occurs when the upper body is restricted by a narrow burial space or wrapped in a shroud (Duday, 2009:45). Further evidence for gradual rather than immediate infilling of the burial space is apparent from the right femoral head of Skeleton 1 having popped out of the acetabulum, indicating an absence of supporting fill around the pelvic area during the process of skeletonisation. Detailed analysis of the burial position for all four Nutbane skeletons is given in the individual archaeothanatological reports at Appendix 5.

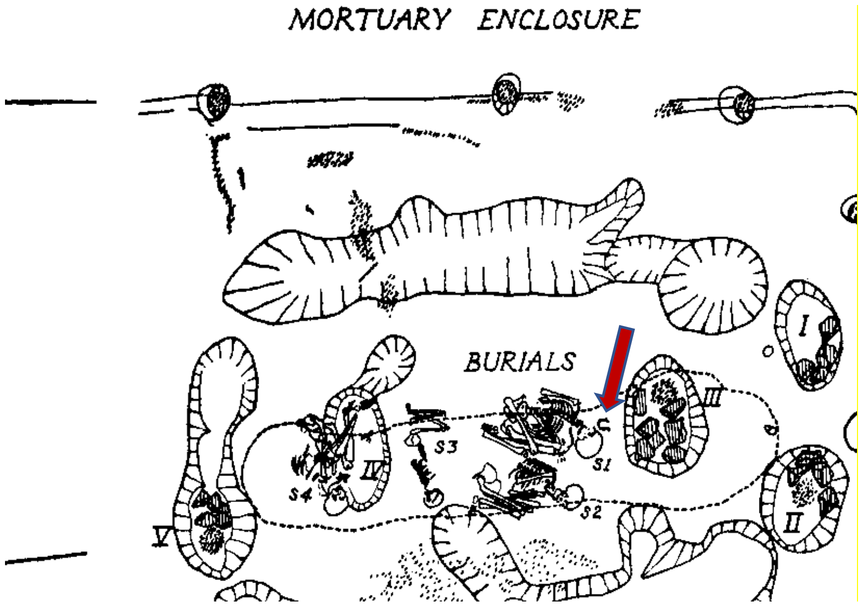


Figure 5.4: Plan of burials at Nutbane (from de Mallet Morgan, 1959:21, figure 3) with mandible of Skeleton 1 arrowed

Skeleton 2, which abuts the south-east side of the edge of the base of the mortuary enclosure, also appears to have been originally laid on his back with tightly flexed legs to the left, indicated by the splay of the rib cage away from the spinal column and the position of the pelvis. The lower limbs are tightly flexed which could result from restriction from the edge of the mortuary enclosure or binding perhaps. Duday (2009:53) notes that closing of intersegmental angles may give such an appearance and results from the volume freed by the decay of soft tissue and is often interpreted as burial within bags or tight binding of the corpse. Also of note, Skeleton 2's mandible is in articulation with the cranium indicating that the skull is in its original position, that is, on the left, facing south.

The position of Skeleton 3, the juvenile individual, has several similar elements to Skeletons 1 and 2, including the disarticulation of the acetabulofemoral joint, suggesting the presence of a shroud preventing supportive infilling and the fallen position of the cranium again indicating the decomposition of an original organic head support. Skeleton 4 was believed by the excavator to be later in date and was positioned over a previous posthole that had possibly been 'cleared' to create space within the mortuary enclosure (de Mallet Morgan, 1959:24). This individual appears to have been buried in a flexed position on the right, evidenced by the retention of the labile patellofemoral joints and bones of the feet in their original anatomical positions. The left acetabulofemoral joint is again disarticulated, indicating that there was perhaps a shroud of some sort creating a void around the body.

There are similarities in the burial positions of Skeletons 1 and 2, side-by-side, orientated east-to-west on their backs with their tightly flexed legs lying to the left. Skeletons 3 and 4, however, are orientated south-to-north, on their right sides. There is an observable difference in the positions of the legs of Skeletons 1, 2 and 4 compared with Skeleton 3's legs which are much less acutely flexed, alluding to a representation of a squatting or kneeling position, while Skeleton 4's posture is more 'seated' in appearance.

Again, it seems likely that these corpses were bound or shrouded in some way, perhaps in leather which would have survived for a significant amount of time while decomposition of the soft tissue took place, retaining the postures of the individuals in an original void, later filled in.

Overall, there are similarities and differences between the four individuals buried at Nutbane and it would be beneficial to obtain, if possible, radiocarbon dates and DNA profiles to consider further what the connections or otherwise may be between them. However, it is possible that the poor preservation of the bones may hamper this. Meanwhile, the discrepancy in the burial positions originally recorded and those identified in this research highlights the benefit of reassessing previous interpretations. In terms of burial practice, taking into account the evidence from the original excavation report and the current research, it could be argued that Skeletons 1, 2 and 3 were tightly shrouded and placed within the mortuary enclosure, which was accessible for a period of time and continued after the later placement of Skeleton 4 within the enclosure (although, equally, this could have been contemporaneous with the other three skeletons), and that later still, perhaps following skeletonisation, they were covered with the thick layer of soil and chalk cairn, effectively sealing the burial deposit. There are other examples of original depositions followed by later sealing of burials, such as at Fussell's Lodge in Wiltshire (Whittle, 2007).

There is a potential comparison with the two initial burials at Wor Barrow in Dorset, excavated in 1893-94 (Pitt Rivers, 1898), the archive for which has recently been subjected to an archaeothanatological reassessment (Allen *et al.*, 2016). However, the two individuals there have been found to have originally been buried in an extended position and later rearranged so that the skulls faced right (south) and the legs were flexed also to the right (Allen *et al.*, 2016:37). The reanalysis convincingly demonstrates this post-skeletonisation manipulation. If this was carried out for pragmatic reasons, suggested by the subsequent addition of the remains of a further four individuals to the mortuary box (Allen *et al.*, 2016:37), it seems likely that the style of rearrangement had some basis in custom, given its uniformity. In the case of Skeletons 1 and 2 at Nutbane, though, the current research has not discerned any deliberate or orderly rearrangement of bones post-skeletonisation to indicate any similarity of practice to that at Wor Barrow. The only notable similarity between the two burial assemblages therefore is that Skeletons 1 and 2 at Nutbane and the two initial burials at Wor Barrow face to the south, although the two Nutbane individuals are orientated east-to-west whereas the two at Wor Barrow are west-to-east.

Given the intersegmental angles of the long bones and possible evidence for binding or shrouding for the Nutbane burials, another potential avenue of investigation is that of 'mummy bundles'. Wor Barrow is where the first such Neolithic individual has been identified, an adult male secondary inhumation within the ditch who had died some considerable time previously and therefore had been tightly wrapped in some way as the joint articulations had been retained (Allen *et al,* 2016). Mummy bundles are previously known from Britain, for example Dorchester (Smith *et al.*, 1997) and Down Farm (Green, 2003) and recent studies have developed a methodology for the identification of mummification in the archaeological record based on microstructural, contextual and AMS ^{14}C analysis of bone (Parker Pearson *et al.*, 2005; Booth *et al.*, 2016). Identification of individuals potentially subjected to mummification is arrived at by the presence of a tightly flexed burial posture in conjunction with a significantly earlier date of death than deposition, and pre-depositional modification of bones indicating possible methods of soft tissue preservation (Parker Pearson *et al.*, 2005:535). The initial feature to note, therefore, when considering this is tight flexion of the limbs. In the case of the Nutbane burials, they were all acutely flexed, some more so than others, with Skeletons 1 and 3 estimated at 70^{o} and 80^{o}, respectively, and Skeletons 2 and 4 at 20^{o} and 30^{o}, respectively. Of the Nutbane assemblage, therefore, Skeletons 2 and 4 could warrant further investigation, however, the current research has not found any evidence of post-mortem manipulation of skeletal elements to suggest this would be worthwhile. It seems likely that the deceased were tightly shrouded, resulting in the positions discovered upon excavation.

Lambourn

The long barrow at Westcot Down, Lambourn, was probably first investigated in the 19th century and this probably resulted in the loss of some of the original burial deposits (Case, 1956; Schulting, 2000:26). It was excavated by Grinsell in 1935 who interpreted several large sarsens at the eastern end as remains of chambers similar to those at nearby Wayland's Smithy, and further excavated three decades later (Wymer, 1966), with AMS dating being carried out more recently (Schulting, 2000). A Late Neolithic 'crouched' burial from a rough sarsen cist has been excluded from this study but two Early Neolithic fragmentary deposits, the cranium of an adult female (3790-3640 cal BC, OxA-3694) from the primary ditch silts and an adult femur (3930-3650 cal BC, OxA-7693) from the tertiary silts, are included. In their osteological assessment, Brothwell and Powers (in Wymer, 1966:14) felt that all the burial deposits at Lambourn were adult female individuals. The author's reassessment of the archive broadly agrees with the conclusions of the previous analysis although has not attempted to assign sex to the femur. The female dominance of this small assemblage is potentially interesting, however, although the possible loss in the 19th century of other burial evidence frustrates any attempt at drawing further conclusions.

Wayland's Smithy

Wayland's Smithy was first excavated in 1919-20 (Peers and Smith, 1921), albeit poorly by today's standards, and further excavations were carried out by Atkinson and Piggott between 1962-3 (Atkinson, 1965; Whittle, 1991). A comprehensive report summarising all the previous investigation was published by Whittle in 1991 and a further reassessment and dating programme has recently been carried out (Whittle *et al.*, 2007). This summarises the osteological findings and refers to a planned forthcoming detailed osteological report, although this is still forthcoming (Wysocki, 2018), and further information requested for the current research has not been received at the time of writing. Wayland's Smithy is a two-phase tomb, Wayland's Smithy I being a small oval barrow containing a mortuary structure, interpreted as possibly representing burial rites of both primary burial or exposure with at least some individuals seemingly deposited directly into the mortuary structure (Whittle, 1991). The burial data from Wayland's Smithy II, a trapezoidal barrow, was insufficient to include in the present study which focusses instead on the evidence from its predecessor.

The human remains from Wayland's Smithy I were originally assessed in great detail by Brothwell and Cullen (in Whittle, 1991:72-80) and the 2007 reassessment respected the findings but reached a number of different conclusions regarding the stratigraphic and contextual relationships of the complex burial assemblage. An MNI of 18 was arrived at, comprising 17 adults and one child; 11 of the adults were assessed to be male, and three were female. Revision of MNI estimation downwards is often the case in archive reassessments due to the different methods in use now compared to the early 20th century (e.g., Smith and Brickley, 2009). An *in situ* photograph of articulated burials WS1/PB1 and WS2/PB2 (the 'WS' and 'PB' nomenclature indicating cranial and post-cranial remains, respectively) is at Figure 5.5 and the resultant plan of the mortuary deposit is shown at Figure 5.6. WS1/PB1, at the distal end of the mortuary structure, was originally interpreted as possibly being the last or at least one of the later depositions if the mortuary structure had been 'open or lidded, accessible and barrowless' (Whittle, 1991:96).

The current research has found that both individuals WS1/PB1 and WS2/PB2 were quite possibly placed in the mortuary structure in a seated position, perhaps bound or shrouded, and subsequently fell to the side. It can be discerned from the photograph and plans that the mandible of WS1/PB1 remains in articulation with the cranium, which suggests this was the original burial location.

Further evidence of this would be the presence of the labile articulations of the distal joints of the feet which are apparent in the photograph and depicted on the plan from the original assessment (Whittle, 1991:70,figure 7), however, the bones of the feet are absent from the plan in the reassessment (Whittle *et al.*, 2007:106,figure 2). This may result from the re-allocation of particular body parts to different individuals in the group based on the reassessment of the assemblage, which the authors explain was necessary as the original stratigraphy was affected by the phased 'layers' of excavation rather than their depositional sequence (Whittle *et al.*, 2007:107), however, given the position of WS1/PB1 separate to the main commingled burial assemblage, it could be interpreted that the bones of the feet were omitted from the plan for another reason. Furthermore, the femoral heads have come out of the acetabula and the ribs have fallen interiorly and spread laterally, both of which suggest the body was in its original location but that the uneven, stony surface on which it lay, perhaps in conjunction with shrouding or binding of the corpse, affected movement during the decomposition of the soft tissues. The cranium of WS2/PB2 appears to have fallen inferiorly following decomposition of the soft tissues of the atlanto-occiptal joint, suggesting this was the original burial position, the acetabulofemoral joints have disarticulated and the ribs appear to have flattened inferiorly. Although complicated by its location in the commingled burial deposit and furthermore by the rocky surface beneath, it seems likely that this individual was also shrouded or bound in some way when deposited and that this was a primary deposition.

Although WS1/PB1 could be interpreted as having received special treatment in some way that set him apart from the rest of the burial assemblage in Wayland's Smithy 1, WS2/PB2 is less straightforward to interpret. It is likely this individual's articulation results from his location on the top of the pile of bodies, as there are other individuals whose original position can be observed as similar but in a greater state of disarticulation. These individuals being lower down in the pile of bodies, it is feasible that as decomposition of the soft tissues took place, gravity would have taken the bodily fluids downwards, having a greater displacement effect the lower down they went. This could be argued in the case of a single, burial event, resulting in decomposition occurring almost simultaneously, or if bodies were added over time, a similar yet different effect may be inferred as the fluids of bodily decomposition were released over a period of time, affecting the human remains already below them. The four individuals summarised in Table 16 are shown in sufficient articulation to be interpreted by the author as 'flexed', with WS1/PB1 and WS2/PB2, as already suggested, in possible original seated positions. These can be compared to the other possible seated burials in the database at the Nutbane long barrow and Park Farm round barrow and these are further discussed in Chapter 6.

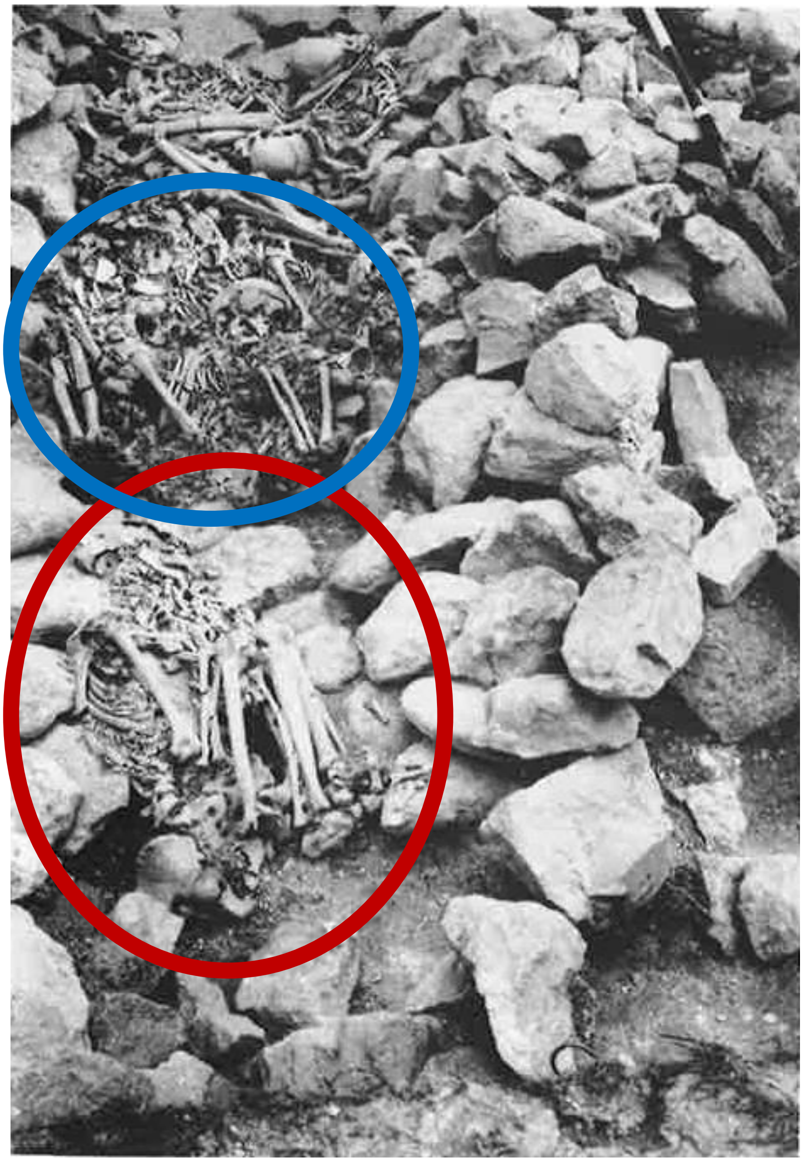


Figure 5.5: View from the north, distal end, of the burial deposit in the mortuary structure of phase 1, Wayland's Smithy (Whittle, 1991:plate 11), showing burials WS2/PB2 (ringed, top) and WS1/PB1 (ringed, bottom)

Age	Sex	Position	Orientation	Lying on	Facing
Adult	Male	Flexed	S-N	Left	W
Adult	Male	Flexed	SW-NE	Right	SE
Adult	Male	Flexed	S-N	Right	E
Adult	Male	Flexed	S-N	Right	E

Table 16: Orientations of Wayland's Smithy burials (after Whittle *et al.*, 2007)

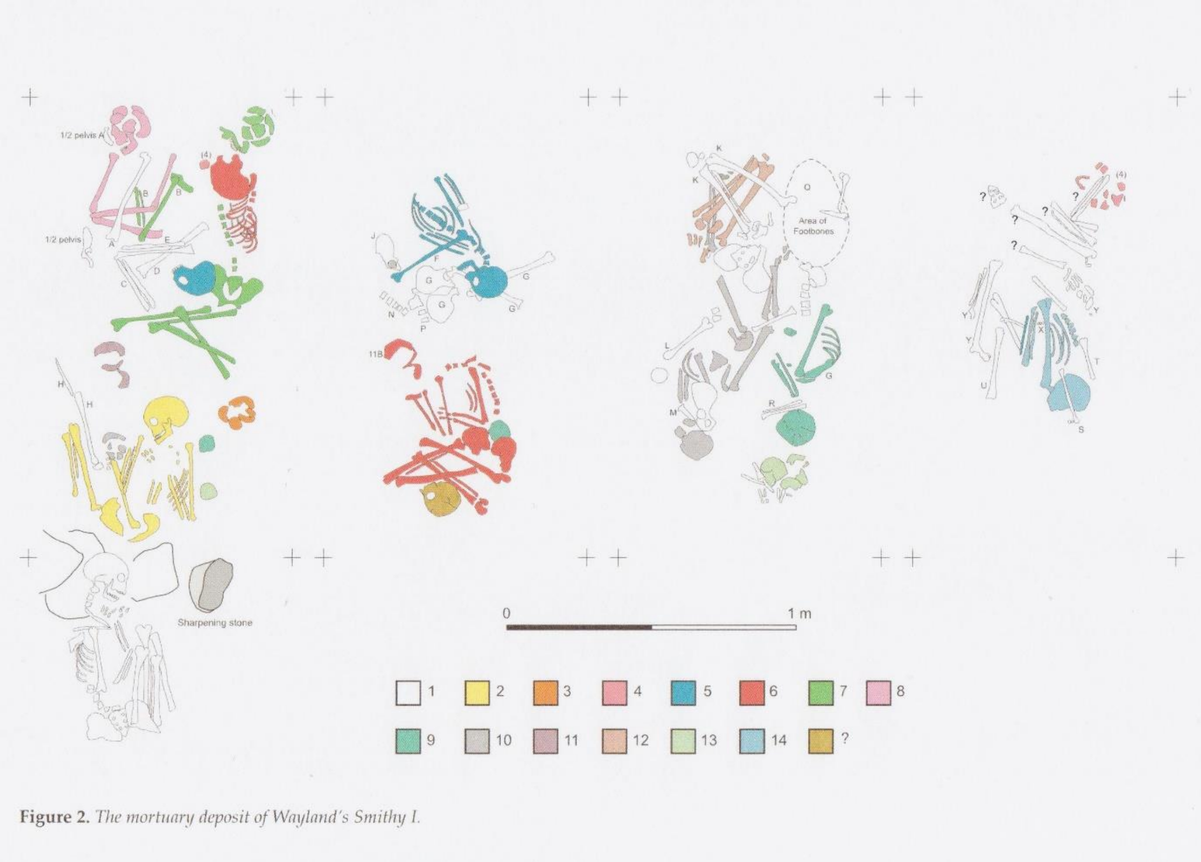


Figure 5.6: Plan of the mortuary deposit of Wayland's Smithy 1 (Whittle *et al.*, 2007:106,figure 2)

Whittle (1991:95) gave detailed consideration to the commingled burial assemblage of Wayland's Smithy 1, suggesting six possible processes of insertion ranging from 'complete bodies, one by one (over a short or long timespan)' to 'incomplete and disarticulated skeletons, all at the same time', and proposed seven potential processes of attrition, ranging from 'rodent and scavenger attack' to 'deliberate robbing out or movement of bones from tombs'. The excavator felt the remains had been exposed nearby, possibly on a raised platform, prior to deposition (Atkinson, 1965:130). Whittle *et al.* (2007:117-119) describe difficulty in ascribing one particular mortuary rite to Wayland's Smithy, citing similarly dated articulated deposits and disarticulated remains (two of which show signs of canid scavenging), and drawing attention to the evidence for interpersonal violence against a background of the contemporary appearance of causewayed enclosures in the landscape around the same time with resultant tensions and competition. This interpretation of diverse mortuary practice seems reasonable on the basis of the evidence and several intriguing elements are highlighted, particularly in terms of whether the burial deposit represents a single event or successive depositions over time. The carefully built mortuary structure and orderly deposits contrast with the haphazard, rushed group burial at Talheim (Wahl and Traumann, 2012) and the likelihood of a lidded wooden mortuary box is argued to suggest successive deposition and, in turn, an attachment to place, for which there is evidence of usage dating back to the Mesolithic (Whittle, 2007:118). However, direct dating has shown a rapidly deposited group of almost exclusively male individuals and unutilised space within the structure (Whittle, 2007:118), all making a definitive interpretation elusive.

For the purposes of this study, two aspects are particularly notable. Firstly, the tendency towards a general burial position 'carefully placed, in contracted posture' (Whittle *et al.*, 2007:118), which this research suggests may include some individuals buried in a seated position, and the male dominance in the burial assemblage, which appears to have had some significance in relation to this Early Neolithic group. Additionally, for those individuals where a burial orientation was observable, this is south-to-north or south-west-to-north-east with most on their right sides. These aspects are discussed further in Chapter 6.

Ascott-under-Wychwood

North of Lambourn and Wayland's Smithy is Ascott-under-Wychwood long barrow, excavated between 1965-69 by Don Benson and thoroughly reported and reassessed more recently (Benson and Whittle, 2007). The human remains assemblage has been assessed to represent an MNI of at least 20 individuals comprising six males, two females and eight adults of indeterminate sex, along with a juvenile and three infants aged 11+ years, 7+ years and 38-40 weeks, respectively. The burial data for the assemblage used in this research is given in Table 17.

Age	Sex	Position	Orientation	Lying on	Facing
Infant 11+ (A1)	-	Flexed	W-E	Right	S
Adult (B2)	Male	Seated	S-N	Right	E
Adult (C)	Male	(Cranium only)	-	-	S
Juvenile 16-17 years (D1)	-		S-N		
Infant 38-40 weeks (D2)	-		S-N		
Adult (E1)	Female	Tightly flexed	E-W	Right	N

Table 17: Burial data for Ascott-under-Wychwood (after Benson and Whittle, 2007)

As with Wayland's Smithy, the mortuary practice at Ascott-under-Wychwood has been described as diverse with some cases of weathering, particularly to the ribs, suggesting exposure prior to deposition, and evidence for possible successive accumulations within the mortuary structure, as well as subsequent extraction and potentially grouping of skulls or crania in cists (Benson and Whittle, 2007). The complex nature of the commingled burial deposits makes certain interpretation difficult to achieve but some aspects of the assessment are of particular interest to the current study. Benson and Whittle proposed that whole bodies were buried on their sides with flexed lower limbs and one individual (B2) is described as having been in a possible seated position (see Figures 5.7 and 5.8). They also argue that bodies may have been tightly bound or shrouded and that the burial cists encased containers with lids or that bodies were shrouded and placed on stretchers. Again, there is further uncertainty as to whether the multiple burial assemblage represents successive depositions or a single, original event.

Interestingly, the most common burial orientation is, again, south-to-north, although there are also instances of east-to-west. Where the side is recorded or discernible, it is again the right. Demographically, there are twice as many males as females, although there is also a significant proportion of individuals whose sex could not be estimated from the limited, fragmentary remains. These aspects are discussed in more detail in Chapter 6.

Lyneham

The long barrow at Lyneham in Oxfordshire was excavated in the late 19th century (Conder, 1895) and found to contain previously disturbed disarticulated human remains, including skull fragments, with later Anglo-Saxon inhumations. The archive held by the Natural History Museum includes only one cranium from the Neolithic phase of the barrow. This has been previously reconstructed and labelled 'Found near flints 8 feet north of the wall'. This has been assessed by the author as a probable adult female and trauma noted to the left parietal bone aligns with a previously noted depressed fracture identified in a study on Neolithic cranial injuries, in which it was found that an equal proportion of victims of violent trauma are female and male (Schulting and Wysocki, 2005:121-123).

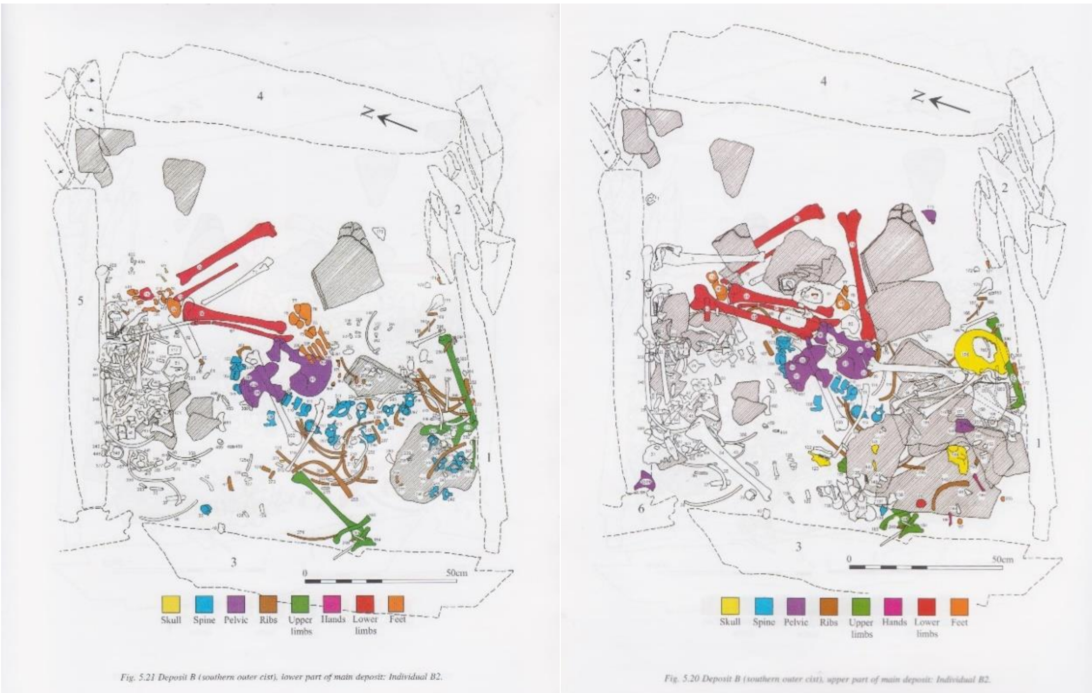


Figure 5.7: Ascott-under-Wychwood Deposit B (southern outer cist), plans of lower and upper main deposit (Benson and Whittle, 2007:158 & 159, figures 5.20,5.21)

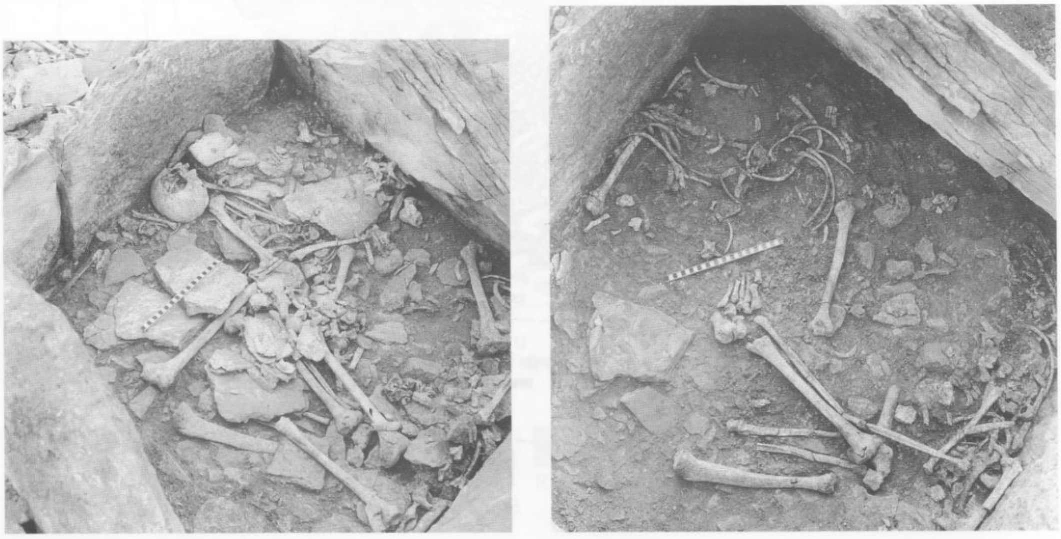


Fig. 5.13 Deposit B (southern outer cist): excavation stage 5, from the north-east.

Fig. 5.14 Deposit B (southern outer cist): excavation stages 7 and 8, from the north-east.

Figure 5.8: Ascott-under-Wychwood Deposit B excavation stages 5, 7 and 8 from the north-east (Benson and Whittle, 2007:150, figs 5.13,5.14)

Coldrum

Coldrum long barrow in Kent is the only one of the Medway megalithic monuments included in the current research by virtue of its recent reassessment and direct dating programme, placing its human remains within the Early Neolithic period (Wysocki *et al.*, 2013). The barrow was originally investigated by antiquarians in the 19th century and there is a report of a skeleton having been excavated from the chamber some time before 1893, subsequently interred in Meopham churchyard (Fielding, 1893; Payne, 1893:140), although in his reassessment of the evidence, Ashbee suggests that this could have been an erroneous interpretation of the discovery of a cranium and other disarticulated skeletal elements rather than a complete skeleton (Ashbee, 1998:34). The barrow was excavated in 1910 (Bennett, 1913), when two groups of human remains were found, and excavated further after the First World War by E W Filkins, who had assisted Bennett in 1910 (Filkins, 1924; 1928).

The remains are all disarticulated/fragmentary and were originally assessed by Sir Arthur Keith of the Royal College of Surgeons who estimated an MNI of 22 individuals (Keith, 1913). The recent reassessment, undertaken a full century after the original, revised this figure downwards to an MNI of 17, including 9 adults (probably 5 male and 4 female), four of whom were aged 20-40 years and one older female aged 50+ years, as well as four older children and two younger children of 5 years and 24-30 months (Wysocki *et al.*, 2013). Keith found no trauma, however, the recent reassessment has found evidence for this in the form of cut marks and healed and unhealed cranial and post-cranial injuries in both males and a female as well as juvenile/young adult individuals (discussed further in Chapter 6). No grave goods were found during the excavations, although there were pottery sherds and a flint saw on the upper 'platform' or level, these being described as layered slabs separating specific deposits (Ashbee, 1998:26; Bennett, 1913:78,Plan D).

In demographic terms, the Coldrum burial assemblage clearly differs from those on the western side of the region at Wayland's Smithy and Ascott-under-Wychwood where there is a predominance of male adult individuals, as at Coldrum there is more equality in the composition, with very similar proportions of both males and females and adults and immature individuals. There is also an absence of articulated burials at Coldrum, however this may well be explained by previous disturbance resulting from antiquarian investigations of the barrow.

The excavator noted that 'the only evidence of any definite arrangement would seem to be indicated by the position of the skulls, and most of these would seem to have been placed on their faces, near to and almost touching the west wall of the dolmen, and also as regards No 1 and No 2 skulls of the second [lower] platform these may have been placed against the wall of the once dividing stone' (Bennett, 1913:83). This 'face down' arrangement could be argued to have resonance with 'prone' burials, which are discussed further in Chapter 6; alternatively there may have been a more practical explanation, such as the crania being more stable when placed this way.

Sir Arthur Keith's report on the human remains is very detailed but preoccupied with the supposed racial characteristics of the individuals, particularly the crania, as was usual for his work and for anthropological studies in general at the time. However, his observation that 'the remains of those on the upper platform mostly belong to young persons, two only being old ones, and one bone that of a newly born child, and all possibly belonged to one family' (Bennett, 1913:84) is interesting for its suggestion that there was a distinct grouping of the remains of younger individuals and the potential familial relationships which could explain the mixed demographic. The reassessment reported ongoing strontium and oxygen analysis to investigate the origins and mobility of the burial population and noted that aDNA analysis would be 'highly desirable' (Wysocki *et al.*, 2013:23), although these do not appear to have been published to date.

The recent reassessment and dating of Coldrum concluded that the site was 'probably initiated after the first appearance of other Early Neolithic regional phenomena including an inhumation burial [at Yabsley Street], Early Neolithic pottery and a characteristic Early Neolithic post-and-slot structure, and perhaps of Neolithic flint extraction in the Sussex mines' (Wysocki *et al.*, 2013:1). The temporality of human remains in Early Neolithic sites of south-east England is discussed in Chapter 6.

Park Farm

During excavations in 1979 at the Park Farm round barrow at Lambourn in Berkshire three ‘crouched’ inhumations were found, in what the excavator described as a remnant cairn of sarsen blocks of up to 30 kg in weight, buried close together in ‘burial slots’: Burial 1, an adolescent, was separate but near to Burial 3, an adult male, which overlay Burial 2, an adult female (Richards, 1990a). This was interpreted as a family group, which DNA analysis would be able to confirm or otherwise (subject to suitable samples being available) and radiocarbon dating has returned dates of 3760-3370, 3700-3370 and 3900-3380 cal BC, respectively (HAR-3898, HAR-3884 and HAR-3883).

The report contains detailed plans of the burials (shown below in Figures 5.9 and 5.11) but no photographs are contained in the report or the microfiche appendices, however, the current research has obtained a significant photographic archive from the West Berkshire museum service of more than 70 photographs, most of which are of the inhumation burials. Unfortunately, the photographs are not itemised or labelled, however, their identification has been achieved by alignment with the plan drawings of the burials; photographs are shown in Figures 5.12 and 5.13. Post holes were found around the three burials and were interpreted by the excavator as markers or possibly part of a mortuary structure. The excavator’s view was that the completeness of the three skeletons indicated they had been fleshed when deposited and parallels were drawn with the long barrows at nearby Wayland’s Smithy and Nutbane in Hampshire (Richards, 1990a:27). All three burials were similarly orientated south-west-to-north-east within the burial slots, the construction of which would probably have affected the direction they were placed in, leading to the possibility that, if a particular orientation had been intended, it may have been south-north or west-east. There is no discussion of burial orientation in the excavation report. Kinnes (1992a:127) suggested that the burials at Park Farm were a particular stage of mortuary activity prior to final interment, although Thorpe (1996:16) pointed out the impracticality of this due to the presence of the large sarsen stones above the burial slots and argued that round barrows were final resting places (Thorpe, 1996:167-9). It seems possible that the bodies interred at Park Farm barrow were left purposely to be visible for a time before being covered by the sarsen stones, thereby providing a visual message of some kind to the living. Other round barrow burials in the current research are discussed below but do not provide any obvious comparisons with the cist-type arrangement at Park Farm, suggesting unusual mortuary practice for this type of monument in the Early Neolithic. There are similarities, however, with the Late Neolithic ‘contracted’ burial of an adult female at nearby Lambourn long barrow (Figure 5.10), described by the excavator as being in an ‘apparent cairn’ or ‘rough cist’ constructed of sarsens (Wymer, 1966: 8-9).

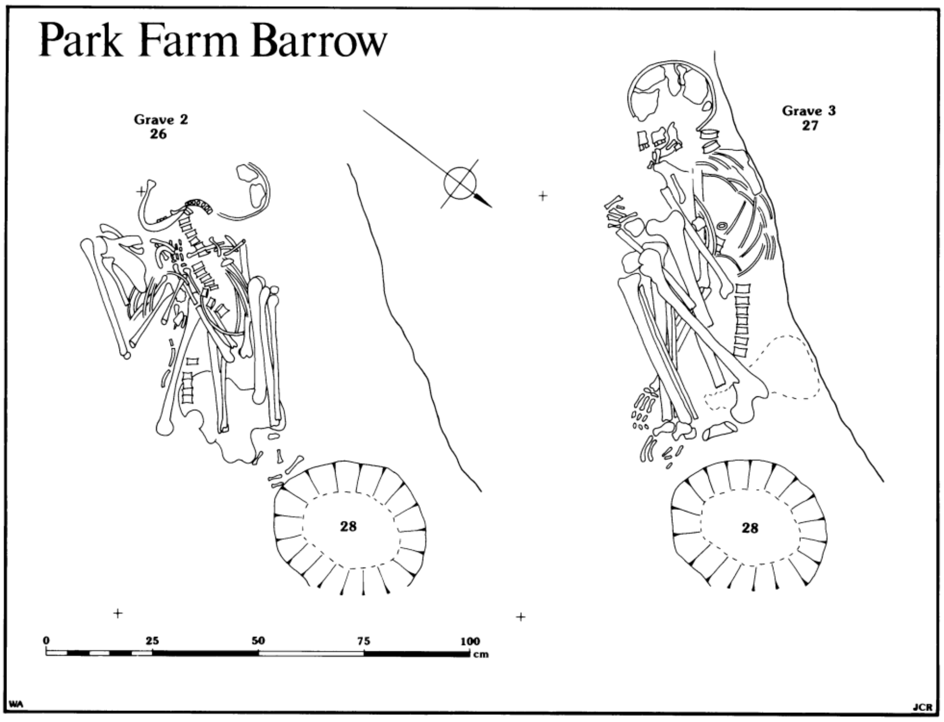


Figure 5.9: Plan of Burials 2 and 3 at Park Farm barrow (Richards, 1990a:26, figure 21)

Figure 5.10: Late Neolithic burial at Lambourn long barrow (Photograph courtesy of Reading Museum)

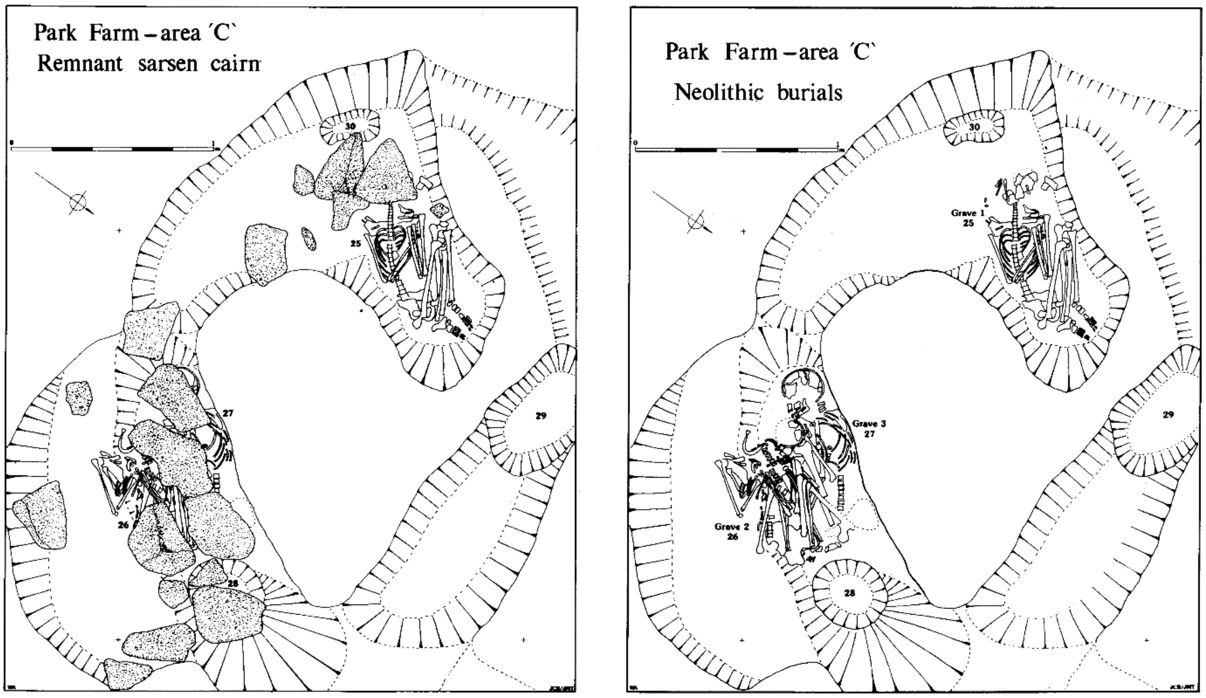


Figure 5.11: Plans of inhumation burials at Park Farm barrow (Richards, 1990a:25, figures 19, 20)

On the basis of the plan (Figure 5.11) and photograph shown at Figure 5.12, Burial 1 at Park Farm appears to be lying on its back with tightly flexed legs and arms and could conceivably have fallen into this position from an original seated pose shortly after deposition, probably shrouded or bound, retaining articulations of several labile joints such as the patellae and distal joints of the feet, as depicted. The right femoral head appears to have come out of the acetabulum, indicating that the burial space was a void. The legs and pelvis seem to have fallen to the left, supported by the edge of the burial slot. When a corpse is buried on its back with the knees raised, the patellae would be expected to fall towards the lower third of the leg pulled by the fluid of putrefaction (Duday, 2009:35) but, unfortunately, this level of detail is difficult to observe in the photographs or plans of either the Park Farm or the Nutbane burials, demonstrating one of the frustrations of conducting archaeothanatological assessments on archival data rather than burials *in situ*.

Figure 5.12: Park Farm Burial 1 *in situ* (photograph courtesy of Newbury Museum)

Burial 2, the adult female, is the most disarticulated of the three and her legs appear to have been tightly flexed originally, perhaps bound or tightly shrouded. It is difficult to discern the presence of any labile joints in their correct anatomical position but there are several phalanges depicted in the region of the left pelvis which itself appears to have flattened laterally. Of the persistent joints, the spinal column has split into segments, as is typical during decomposition in a void (Duday *et al.*, 2014:240). The atlanto-occipital joint appears to be articulated and, although fragmentary, the cranium has fallen backwards as would be expected following the decomposition of the soft tissues of the cervical spine when there is space to do so, perhaps indicating a delay between the deposition of Burial 2 and Burial 3 above, although a caveat to this interpretation is the fragmentary nature of the cranium. Of note, the archive contains a bag of loose bones (including phalanges, a left trapezium and a rib fragment) labelled 'from within skull' as well as a bag of vertebrae fragments labelled 'from under pelvis'. The archive was also found to contain additional, larger hand bones mixed in with the hand bones attributed to Burial 2. Furthermore, the skeletal report (Carter in Richards, 1990a:microfiche B6-8) mentions a loose human incisor 'not matching any of the three skeletons was found associated with the pelvis fragments of this skeleton'. It seems most likely that these bones, with the possible exception of the incisor, originated from Burial 3, situated directly above Burial 2, which became confused during excavation, or during decomposition if they were interred contemporaneously.

Figure 5.13: Park Farm Burials 2 (left) and 3 (right*) in situ* (photographs courtesy of Newbury Museum)

Adult male, Burial 3, is well articulated and apparently in its original position on the right side, perhaps representative of an original sitting position while shrouded or bound in a tightly flexed position, with the arms underneath the legs. The resultant appearance is of this male adult lying intimately next to or above the female. Of Burial 3's labile joints, the hands and feet appear to be in their original articulations; likewise the patellae. The pelvis is depicted with a dotted line, assumed to indicate its fragmentary condition and fragments are present in the archive, including the right acetabulum. Of the persistent joints, the atlanto-occipital joint appears to have moved slightly from its correct position; the majority of the cervical vertebrae are not discernible on the plan but five are present in the archive. Separate segments of three and seven vertebrae are shown on the plan and these could represent separate thoracic and lumbar groupings resulting from an original burial void. Eight thoracic and five lumbar vertebrae were noted by the author when compiling the inventory. Both ankles appear to be in their correct anatomical position in the plan and photographs.

Looking at this group of burials as a set, interpreted originally as a probable family, several interesting elements emerge. It is important not to assume without DNA evidence that the individuals were related to each other, although the argument put forward in the excavation report based on the proximity, ages and sexes of the individuals is a compelling one. The positions of Burials 2 and 3 are particularly interesting. The excavator's description of them as being 'superimposed' appears to be accurate and the excavator's opinion is that they formed a single deposit 'despite the absence of sealing stratigraphy' (Richards, 1990a:27), a view to a limited extent borne out by closeness of the radiocarbon dates. Burials 2 and 3 appear intimately placed, perhaps to reflect a close relationship in life; equally, though, this could result from a more pragmatic explanation. Burial 1's location separate to the other two burials could indicate a different type of relationship to the other two, or perhaps it signifies that no relationship exists or, again, a more mundane reason altogether. This example highlights a common consequence of interpretation in archaeological reports whereby the more interesting possible explanation or the one most easily understood in the modern day is suggested and perhaps too readily accepted. As noted previously, a similar issue exists throughout the archaeological record with regard to burial positions which, once published, are generally accepted as correct. Those at Park Farm were, as noted above, originally all recorded as 'crouched'. The interpretation of this term in the case of the Park Farm burials could, however, be based as much on the dictionary definition of a squatting-type position as on common archaeological parlance for a skeleton with bent limbs, although the latter is more probable in the context of recording norms at the time. From the plans and photographs, all three burials give the impression of having potentially been placed in a sitting position prior to falling or being placed on their sides soon after while restricted in some way, perhaps by clothing, shrouding or binding, which retained the joint articulations in the case of Burials 1 and 2 and, to a lesser extent, Burial 3.

The extra incisor tooth noted in the osteological report is intriguing. Possible explanations could be that it resulted from the remains of other individuals having also been interred in the cairn or misinterpretation of the composition of Burials 2 and 3. Alternatively, it could perhaps have been a keepsake belonging in life to Burials 2 or 3, or was it lost by someone around the time of the burials by another individual involved in the process.

The excavator refers to similarity in the burials with those at Nutbane, the Park Farm burials immediately pre-dating the single radiocarbon date from Nutbane of 3761-2936 cal BC (BM-49) (Richards, 1990a:27). Table 18, below, summarises the findings of the current research regarding the demography and burial orientation data for the two barrows.

Burial	Age group	Sex	Lying on side	Orientation	Facing
Nutbane 1	Adult	Male	Left	E-W	S
Nutbane 2	Adult	Male	Left	E-W	S
Nutbane 3	Juvenile	-	Right	S-N	E
Nutbane 4	Adult	Male	Right	S-N	E
Park Farm 1	Juvenile	-	Left	SW-NE	NW
Park Farm 2	Adult	Female	Right	SW-NE	SE
Park Farm 3	Adult	Male	Right	SW-NE	SE

Table 18: A comparison of the demographic and burial orientation data for Nutbane and Park Farm barrows

It is noticeable that, when considered collectively, the majority of these burials are adult male individuals, although there is one adult female at Park Farm and a juvenile at both barrows in this small grouping. There is no observable pattern of orientation on the basis of age or sex. The orientations at Nutbane are neatly east-to-west in the case of burials 1 and 2 and south-to-north for burials 3 and 4. The burials at Park Farm are all orientated south-west-to-north-east. As mentioned earlier, it can be wondered whether such orientations at those at Park Farm were deliberately this precise and whether the restrictions of the burial slots in this case may have been the main factor affecting this. What is clear, however, is that all three burials are on the same alignment, whatever this may represent; burial orientations are discussed further in the next chapter. It is also interesting, perhaps, that the two adults at Park Farm are on their right sides while the separately-buried juvenile is on the left, resulting in the adults facing towards the south-east and the juvenile facing north-west. At Nutbane, there is a spatial division between the four burials (and it is noted again that the excavator interpreted skeleton 4 as being a later insertion) in that Skeletons 1 and 2, both adult males, are lying on their left, orientated east-to-west and hence facing south, while the juvenile skeleton 3 and potentially later adult male Skeleton 4 are on their right, orientated south-to-north and facing east.

Whiteleaf Hill

A round barrow at Whiteleaf Hill in Buckinghamshire was excavated between 1934-39 but, due to the untimely death of the excavator, Sir Lindsay Scott, was not written up until two decades later (Childe and Smith, 1954). The skeletal remains of a middle-aged man were found within the barrow, with just skull fragments and one tooth in the burial chamber itself, the remainder scattered to the east of the chamber. The disarticulated nature of the skeletal remains precludes any conclusions about burial position and there were no grave goods. The remains were originally assessed by Miss M L Tildesley of the Royal College of Surgeons who found the individual to have a stature of 5ft 6in-

5ft 9in (1.68-1.75 cm) of robust build with a 'dolichocephalic' skull and 'platymeric' femorae. She interpreted the disarticulated state of the bones as having 'numerous breaks not made when the bone was fresh' (Tildesley in Childe and Smith, 1954:220).

The remains were accessioned to the Natural History Museum where only skull fragments now survive in the archive (the long bones which were also donated, having been lost over time) and these have been reassessed by the author, in agreement with the original analysis, to be those of an adult male aged over 45 years. The site and excavation archives have also recently been reassessed by Oxford Archaeology as part of a local nature reserve restoration project at Whiteleaf Hill (Oxford Archaeology, [online]) and this included radiocarbon dating of one of the skull fragments which returned a date of 3760-3640 cal BC (OxA-13567), placing the burial comfortably in the Early Neolithic period. This provides a good example of a round barrow, often associated with the Bronze Age, having been constructed and used as a mortuary location significantly earlier.

Mount Farm

The oval barrow at Mount Farm at Berinsfield, Oxfordshire, was excavated in the late 1970s (Lambrick *et al., 2010*) and burial F602, an articulated adult male, is included in the database for this research due to its radiocarbon date of 3640-3380 cal BC (OxA-15748). The individual was described as being in a 'crouched' position, orientated south-east-to-north-west, on the left, facing south-west, and was buried in association with a flint knife and with two flint blades, one close to the shoulder and one under the arm, as can be observed in Figure 5.14. The largest of the two blades is noted to be similar to the one with Barrow Hills burial 5352-A (Barclay and Halpin, 1999:19-20). As with Barrow Hills, there were also later burials at Mount Farm and some other similarities have been mooted, such as the possibility of this Mount Farm burial being half of a double burial similar to a Middle Neolithic adult male and female buried in the centre of the oval barrow at Barrow Hills (Lambrick *et al.,* 2010:21), although the dating for those does not overlap, a discrepancy which has been put down to the effects of humic acid contamination (Barclay and Halpin, 1999:20). It has been argued that a later Beaker burial at Mount Farm, which may have disturbed an original burial alongside F602, could indicate the awareness of an ancient burial tradition in this location, perhaps marked by trees or clearings (Lambrick *et al.*, 2010:22).

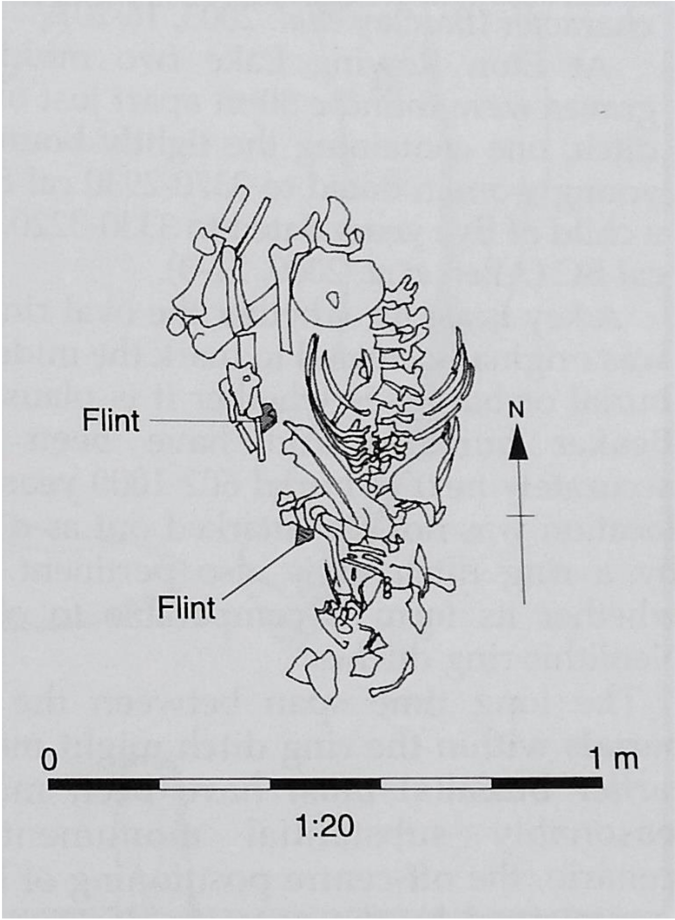


Figure 5.14: Mount Farm burial F602 (Lambrick *et al.*, 2010:21,figure 15)

Archaeothanatological analysis of this burial suggests that this individual was either buried in a flexed position on the side and the torso fell back during decomposition or was flexed on its back with the legs up and subsequently fell to the side. These observations are based upon the retained articulation of several labile joints, such as the left knee and lumbar spine, and the lateral flattening of the ribs. It is notable that the hands and feet are apparently absent, however.

North Marden

The other oval barrow included in the current research is at North Marden in West Sussex, excavated in 1982 (Drewett, 1986). Here were only disarticulated human remains in the barrow ditches in the form of a fragmentary cranium, tibia and humerus. The excavator interpreted these as the bones of separate individuals deliberately deposited. The human remains were assessed by Sue Browne (who, 20 years later, also assessed the Barton Stacey long barrow assemblage, as outlined above) who felt the cranium was that of an adult male aged 30 years or more and described it as being of the 'long-headed Neolithic type' and as having been gnawed by rodents, unlike the long bones, and described the humerus as slender and typically female, and the tibia as ‘platycnemic, typical of the Neolithic and Bronze Age’ (Browne in Drewett, 1986:41). It was also noted that 11g of cremated bone was recovered from the barrow but it was unclear whether these were animal or human remains. The writer’s assessment of the cranium agreed that the individual was probably male but felt he was probably a little older. The recent *Gathering Time* dating programme arrived at a date range for the ditch cut and/or construction of the barrow of 3765-3475 cal BC and a TPQ from charcoal in the cranium context has a date range of 3710-3110 cal BC (HAR-5544).

Overall, burials at barrows exhibit variety in number and demography, assemblages can be dominated by male or female burials, the larger barrows in the west of the region tend towards male dominance while eastwards there is more equality, and there is some convergence in burial orientations. These elements are discussed further in Chapter 6.

<u>Causewayed enclosures</u>

Whitehawk

The causewayed enclosure at Whitehawk, Brighton, East Sussex was excavated over three seasons between 1929 and 1935 (Ross Williamson, 1930; Curwen, 1934 and 1936), the work instigated on a rescue basis due to imminent works to Brighton race course. The original excavation reports, published in *The Antiquaries Journal* and *Sussex Archaeological Collections*, recorded the human remains that were found. Those recovered from the first excavation in 1929 (Ross Williamson, 1930), which were found within the faunal assemblage from three of the enclosure ditches, comprised fragments of humerus (one identified as a child’s), ulna, acetabulum, a child’s left femur, tibia and vertebra. The total of nine fragments were listed in the excavation report but no further analysis was recorded at the time. In the second season of excavation, 1932-3 (Curwen, 1934), the disarticulated remains of what was interpreted then as ‘not less than eight individuals’ were found in ditch contexts. The remains are reported as three ‘fairly complete’ skeletons representing two adult females aged 25-30 years and 20-25 years respectively, with heights of 1.42 m and 1.45 m, and a neonate found with the younger female; the rest of the remains were almost entirely cranial fragments recovered from the ditch with some femora, metatarsals and other post-cranial skeletal elements. Analysis of the cranial and post-cranial fragments resulted in some demographic data interpreted as representing five further individuals: three possible males (although one of them thought equally possibly to be a female) aged ‘young’, ‘teens’ and 11-12 years; along with an individual of indeterminate sex aged 15-20 years and a child aged around 6 years. Note was made of ‘striking dental attrition’ and possible palatine torus in the 25-30 year old female and squatting facets were noted on the 20-25 year old female. In the third season of excavation, in 1935 (Curwen, 1936), two skeletons were recovered from ditch contexts, a middle-aged male with dental caries and a child aged around 7 years. It should be noted that, although sex was assigned to the juvenile human remains at the time, this is not currently included in assessments due to the now recognised limitations of existing osteological techniques. Radiocarbon dates have been obtained for the middle-aged male found in the third season of excavation (3520-3120 cal BC, GrA-26966), and the two adult females from the first season (3660-3380 cal BC, GrA-26971 and 3650-3380 cal BC, GrA-26977:), placing these, as expected, in the Early Neolithic period.

In total, then, the remains of eleven individuals have been found: five articulated individuals plus the fragmentary remains of a further six. This is a significant assemblage to have come from the excavation of what amounts to only around 10% of the main four circuits of the causewayed enclosure (Sygrave, 2015:51), indicating the potential for a far larger set of human remains for the site as a whole. Both the articulated and fragmentary burials comprise male, female, adult and juvenile/infant individuals. In addition to the two adult females described as being in a 'semi-prone' burial position, the adult male is described as 'contracted' and the juvenile as 'curled up', giving a good example of the range of descriptions employed to describe burial positions with a similar appearance. The Whitehawk human remains assemblage has recently been reassessed by Archaeology South East (Ponce, 2015) as part of a reassessment of the entire Whitehawk archive. In line with the original excavation interpretation, the remains were of five articulated individuals in deliberate graves within ditches, sometimes accompanied by grave goods. The disarticulated remains were found to have been scattered among the faunal remains, casually lost or deliberately thrown into ditches. An MNI of at least six individuals has been arrived at for these, as opposed to the minimum of eight calculated in the original report (Tildesley in Curwen, 1934). This was calculated on the basis of skull fragments, the skeletal element with the highest frequency among the disarticulated material.

Under the ASE reassessment (Ponce, 2015) the five articulated skeletons comprise two females aged 18-45 and 18-30 years respectively, a male aged 18-45 years, a child aged 7-12 years and a foetus/neonate. The author's analysis for the purpose of this research concurs with the ASE findings; the skeletal report forms are attached at Appendix 4. The disarticulated remains comprise two probable adult males aged 18-30 years, a probable female aged 18-30 years, an adolescent of indeterminate sex aged 13-17 years and a child aged 7-12 years. It is notable that age ranges in the reassessment using modern techniques are broader, for example Skeleton 1, a female originally estimated in the 1930s to be aged 25-30 years has been assigned to the 18-45 'young adult'/'prime adult' age category in the 2015 reassessment, reflecting a recognition in modern practice of limitations in aging techniques.

In the current research, the archaeothanatological analysis (summarised in Chapter 4) includes Skeletons I and II from Whitehawk. The evidence from the archive for Skeleton I comprises a basic plan drawing and detailed written description; for Skeleton II there is also a detailed description as well as an *in situ* photograph.

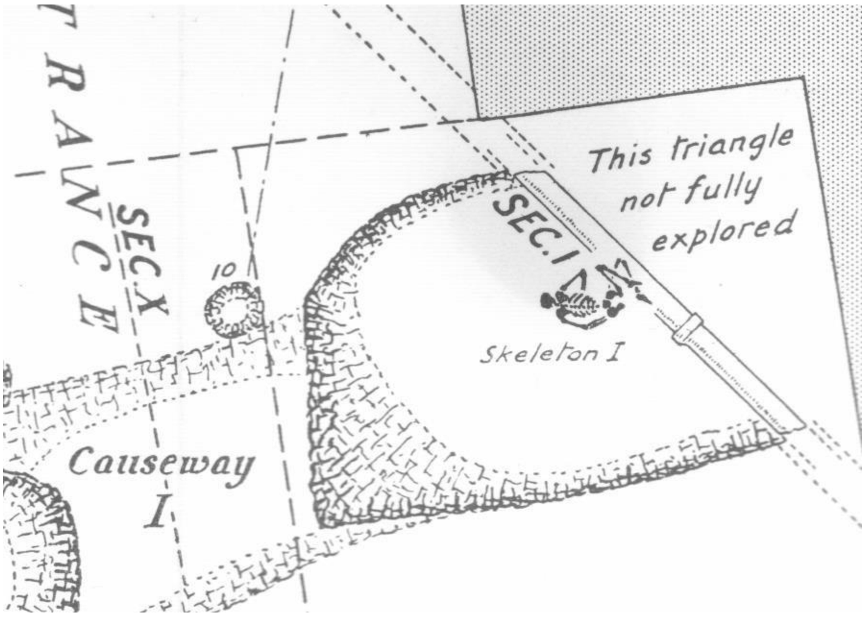


Figure 5.15: Detail from the plan sketch of Whitehawk Skeleton I (Curwen, 1934:plate XIV)

Skeleton I was buried within the occupation layer of ditch D3 CIII and described as:

> 'Semi-prone on left, head to north-west. Shoulders, chest were prone, right hand in front of abdomen, some finger bones imbedded in the mud adhering to the front of the lumbar vertebrae. Left arm nearly straight and lay behind back, behind (south of) semi-prone pelvis. Right hip and knee acutely flexed (knee 3' from elbow). Left hip less acutely flexed. Both heels within 2' of pelvis.' (Curwen, 1934:108).

The plan drawing is shown at Figure 5.15 and a photograph of the reconstruction of the burial on display in Brighton Museum in the 1980s is shown at Figure 5.16. Although the general burial position is representative of a 'crouched' or 'flexed' burial on the left side, there are clear discrepancies between the description of the burial *in situ* from the excavation report and the museum reconstruction, such as the positions of the right hand and the left arm.

Skeleton I was deposited within a ditch but not in a defined grave and without the apparent care afforded to Skeleton II, described below. The acutely flexed position and proximity of both heels to the pelvis, described by the excavator as around two inches, is suggestive of binding of some kind but could possibly be explained by progressive closure of the angles between the limb segments following decomposition. As far as it is possible to reach a conclusion about the original position and burial space for Skeleton I at Whitehawk, it seems possible that this individual was buried in a flexed position on the left, with prone shoulders and chest, as described, in a space that was empty at first that filled gradually or soon after burial, before decomposition. However, more detail of the labile joint articulations would be necessary to investigate this further.

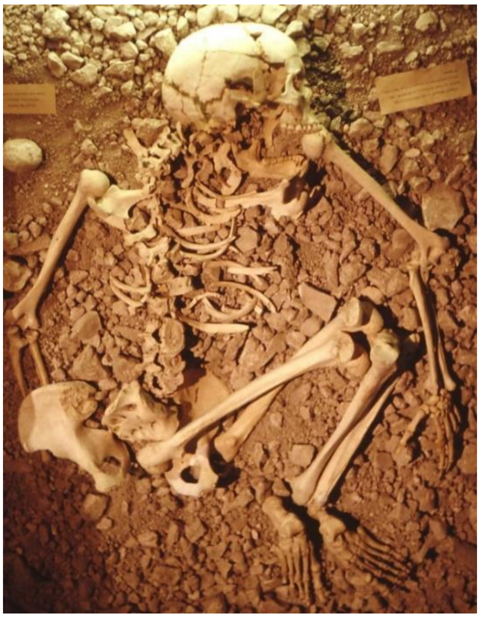


Figure 5.16: Reconstruction of burial of Whitehawk Skeleton I at Brighton Museum in the 1980s (photograph courtesy of Dr K McNamara, University of Cambridge)

The evidence for the burial of Skeleton II benefits from an *in situ* photograph, shown at Figure 5.17. It was described in detail in the report as follows:

> 'A second skeleton was found buried in a definite grave in the lower part of the occupation layer in Cv, the bulk of the Neolithic pottery from this stratum coming from a position immediately overlying the grave. An elongated oval area, 5 ft long and 1½ ft wide, had been surrounded by ten large and a few small chalk blocks. In the space so formed the skeleton was lying, and had been covered with soil up to the level of the top of the chalk blocks, above which was spread a layer of charcoal. Two of the large blocks had imperfect or broken perforations, and from the two spits underlying the skeleton came parts of two chalk weights, one large and one smaller, each broken through a perforation. This grave was clearly contemporary with the occupation layer and had not been dug down through it. The skeleton was lying semi-prone on its right side, with the head to the south and resting the lower jaw on the right upper arm. The right elbow was bent to a right angle, with the forearm and hand pointing down towards the knees. The shoulders and chest were prone, and the left hand was near the face. Both hips and knees were flexed, but not strongly so. Certain bones were found displaced from their anatomical positions, particularly about the upper part of the body, but this must have been due to burrowing animals rather than mutilation or maceration before burial. Thus one metacarpal lay behind the upper edge of the right scapula; the first right rib lay behind the back, opposite the 7th dorsal vertebra; the left clavicle lay beside the left forearm bones; and the left half of the lower jaw was found

beside the left elbow. Most of the small bones of the hands and feet eluded discovery altogether.

The skeleton of an infant was also found in the same grave, lying in the space between the left elbow and knees. The bones had been disturbed, and their minute size made it difficult to determine their relative positions, but most of the fragments of the skull lay towards the south, as was the case with the adult. One or two fragments of the infant's skull may still have been in utero. With the skeleton were found two small perforated pieces of chalk, perhaps pendants, two fossil *Echinocorys scutatus*, and the lower half of the radius of an ox.' (Curwen, 1934:108-110).

Figure 5.17: The burial of Skeleton II at Whitehawk *in situ* (photograph: Sussex Archaeological Society)

The description of Skeleton II as '…lying semi-prone on its right side' was interpreted in the 1980s reconstruction of the burial at Brighton Museum shown in Figure 5.21 (flipped by the author as the photograph showed the skeleton on its left rather than right side; it is not clear whether this was an error in the original reconstruction of the burial or a photographic anomaly) but difficult to identify in the photograph of the actual burial in the excavation report (Figure 5.17). Again, there are inconsistencies between aspects of the description of the burial position and the museum reconstruction which highlights the unreliability of reconstructions of burial positions where accuracy is required for analytical purposes. Burial positions would be difficult to replicate faithfully anyway without the support of the *in situ* grave fill. It would seem advisable to disregard the reconstruction because it is, of course, the subtleties of the positions of skeletal remains in their burial context that provide clues as to their original burial position and, obviously, a reconstruction is only as reliable as its interpretation from the excavation records. Furthermore, in the case of

Skeleton II, visual comparison of the photograph and plan sketch of Skeleton II (Figures 5.17 and 5.18) shows a clear discrepancy in the depiction of the position and angle of flexion of both the upper and lower limbs, which demonstrates the importance of photographic evidence in archival archaeothanatological studies. Given the written description of the hips and knees as 'flexed but not strongly' it is possible that the angle from which the photograph was taken has distorted the view of the flexion of the lower limbs, however, it seems more likely that the excavator was describing the angles of the femorae in relation to the spinal column being less acutely flexed compared those as described for Skeleton I and less than the angle between the femur and tibia. This is reflected in the current research with estimated angles of flexion for Skeletons I and II as 60^{o} and 90^{o}, respectively (detailed in Chapter 4), with Skeleton II being on the maximum limit for an acute rather than obtuse degree of flexion.

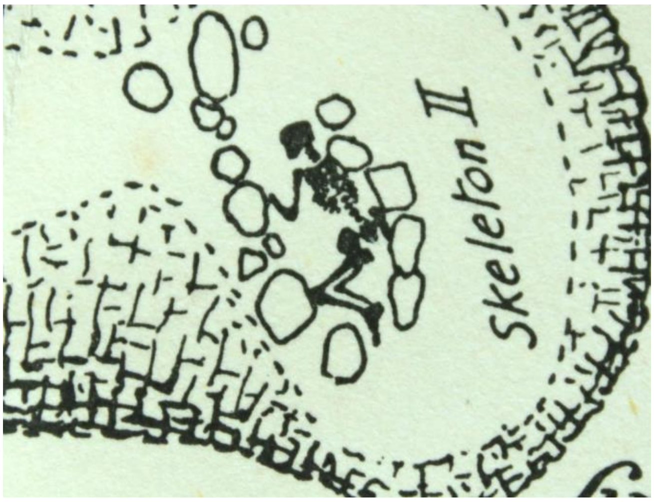


Figure 5.18: Detail from the site plan of the 1932-33 Whitehawk excavations showing the burial of Skeleton II (Curwen, 1934:plate XIV)

The ditch section drawings show that the burial of Whitehawk Skeleton II was upon a layer of medium chalk rubble. It would seem likely that this would have provided a relatively stable surface, however, if the grave was filled in with soil at the time of burial there could be different outcomes to the eventual position of the skeleton depending upon the firmness of the infill. If there was no infill or if it filled in gradually over time, this could have resulted in movement of skeletal elements as the soft tissues decomposed. For example, the head and upper torso, if not securely packed with infill, may have moved downwards, perhaps giving the impression of semi-proneness but having started out in a more contracted/flexed position on the side, later slumping.

Figure 5.19: Reconstruction of burial of Whitehawk Skeleton II at Brighton Museum in the 1980s (photograph courtesy of Dr K McNamara, University of Cambridge)

Further analysis of the photographic evidence for Skeleton II, in conjunction with the written description, indicates that the left acetabulofemoral joint appears disarticulated, indicating a possible original void around the skeleton, allowing some movement following decomposition. The presence of the remains of a neonate 'between the left elbow and knees' and orientated similarly to the adult female suggests it was either *in utero* at the time of burial, indicating a possible breech position, known to be hazardous in childbirth, or placed in a similar position after the death of the adult. It is known that decay of the abdominal organs post-mortem frees space that lasts for a certain time (Duday, 2009:53) and this, particularly in the case of a pregnant abdomen, along with slippage resulting from fluids of decomposition could explain a later slumping of the upper body into a 'semi-prone' position from an original flexed one. The excavator noted that certain bones, particularly from the upper body, had been displaced from their original positions and attributed these to animal burrowing, specifically these were a metacarpal was behind the right scapula, the 1st rib behind the spinal column opposite the 7th dorsal vertebra, the left clavicle beside the left forearm, and the left half mandible beside the left elbow. Overall, it seems that this individual was probably buried in a flexed position in this grave originally and, following decomposition of the abdomen which was likely to have been enlarged at the time due to death in childbirth or stillbirth, the upper body slumped into the 'semi-prone' position it was found in at the point of excavation.

The report says that the burial of Skeleton II at Whitehawk was ‘covered with soil up to the level of the top of the chalk blocks above which was spread a layer of charcoal’ (Curwen, 1934:108). In question here is whether the infill was part of the burial itself or whether it built up gradually over time. The layer of charcoal indicates a burning event, however radiocarbon dating would not be precise enough to differentiate between the timing of the burial itself and the charcoal layer above and interpretation would be dependent upon both the time differential and the species of wood that was burnt. As it is, recent radiocarbon dating has found that the practice of excavation by spits which was employed at Whitehawk has resulted in those samples that were retained being at times ambiguous in terms of stratigraphy (Whittle *et al.*, 2011:223), probably due to the archaeological interpretation of the relative dating of the objects and their relationship with the layers/spits.

Comparison of these two ‘semi-prone’ burials could possibly be made with a Middle Neolithic burial from Les Plots at Berriac, in Aude, France, a primary burial described as being in a prone position, head to the left, right hand holding the right knee, bones of the hand in connection and distal phalanges of the fingers pushed straight into the ground against the upper part of the tibia (Figure 5.20). This was interpreted by the excavator as evidence of earth in contact with the corpse providing an obstacle preventing the bones from falling after decomposition, therefore indicating burial within a filled space (Duday, 2009:38-40).

Archaeothanatological analysis has enabled consideration to be given to the original burial positions of these two adult females at Whitehawk described in the original excavation report as being ‘semi-prone’. Fortunately, the written description is sufficiently detailed to provide significant supplementary evidence but, in the case of Skeleton I, were this not the case then meaningful analysis would not be possible due to the absence of an *in situ* photograph and the lack of detail in the plan. Interestingly, the burial position for these two females was later described as ‘crouched’ by Russell, which clearly differs from the original interpretation of the positions, whereas on the same page he describes the position of the articulated adult male from a ditch at Whitehawk as ‘contracted’, as per the original description (Russell, 2002:90), perhaps representing a reappraisal of the ‘semi-prone’ nomenclature, although this is not stated.

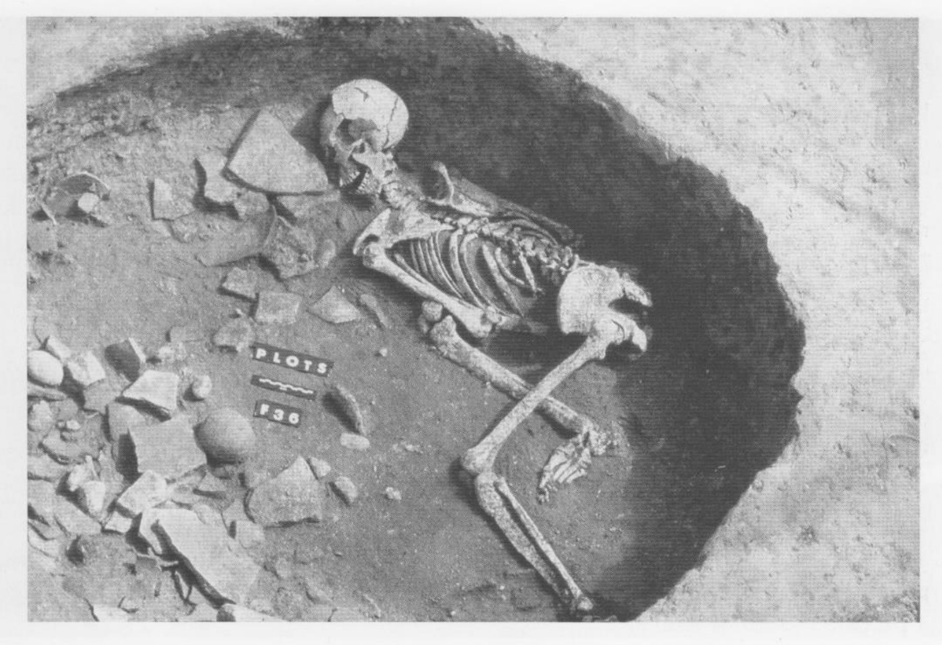


Figure 5.20: Burial F36 at Les Plots, Berriac, France (Duday, 2009:39,figure 20)

Fully prone burial positions are believed to represent deviant burial practice (e.g. Arcini, 2009) and the use of the term 'semi-prone' in relation to the burials at Whitehawk, although apparently describing the position *per se*, could imply to the reader differential burial treatment based on a particular view of those individuals in their Early Neolithic society. Although this could be plausible in the case of Skeleton I, deposited in a ditch without a defined grave, it is more difficult to attribute to Skeleton II given the effort involved in creating the grave from large chalk blocks. However, an alternative view could be that this represented negative symbolism rather than being a respectful memorial, as would be the case in the present day, and this is explored further in Chapter 6.

Two of the articulated burials at Whitehawk, an adult female and a juvenile, both found within Ditch III, were orientated south-to-north on their right sides, therefore facing east. As mentioned above, Skeleton II, the adult female, was buried in a deliberate grave at the north-west end of a ditch segment, surrounded by chalk blocks. The photographs of the burial *in situ* demonstrate the careful nature of the grave which indicates the orientation could have been a deliberate choice. Skeleton I, however, although similarly buried at the north-west end of the next ditch segment to the east (although not in a defined grave), was orientated north-west-to-south-east on her left side, facing north-east. Although potentially close in date (Skeleton I being radiocarbon dated 3660-3380 cal BC and Skeleton 2 dated to 3650-3380 cal BC), it is entirely possible the two females were buried some time apart and were subject to different burial rites as a result of this temporal distance, or for some other reason. The five articulated burials at Whitehawk were orientated to various points. Adult female skeleton I's head pointed north-west, possibly indicating an alignment with the summer sunset or, alternatively, equating to facing north-east and hence the summer sunrise. Adult female Skeleton II, the accompanying neonate, and Skeleton IV were orientated with their heads to the south and on their right sides facing to the east (sunrise) in the case of the adult female. The head of Skeleton III (the adult male), however, was orientated to the east, on the right hence facing north. There are some similarities with the burial orientations at Nutbane in the form of the east-west and south-north orientations, but none with the Park Farm burials.

Burial	Age group	Sex	Lying on side	Orientation	Facing
Whitehawk Sk1	Adult	Female	Left	NW-SE	NE
Whitehawk SKII	Adult	Female	Right	S-N	E
Whitehawk SKIII	Adult	Male	Right	E-W	N
Whitehawk IV	Juvenile	-	Right	S-N	E
Staines	Adult	Female	Left	N-S	E
Shepperton	Adult	Female	Right	NW-SE	SW
Offham	Adult	Male	Right	S-N	E
Hambledon Hill HH76 1948	Juvenile	-	Left	SW-NE	NW
Hambledon Hill HH76 3046	Juvenile	-	Right	W-E	S
Hambledon Hill HH75 2135	Infant	-	Upright	N-S?	S
Hambledon Hill HH75 1360	Adult	Male	Left	N-S	E
Hambledon Hill ST79 2726	Adult	Male	Right	SW-NE	SE

Table 19: A comparison of the demographic and burial orientation data for causewayed enclosures in the dataset with Hambledon Hill, Dorset (Mercer and Healy, 2008)

Other articulated burials at causewayed enclosures in this dataset can provide a location-type comparison. The young adult male burial at Offham in East Sussex, discussed below, was recorded in the excavation report as 'lying on its side facing east' (O'Connor in Drewett, 1977:228). The photograph (Figure 5.25) and plan (Figure 5.26) show that the skeleton was on its right side, implying a south-to-north orientation. Three of the Whitehawk burials are orientated south-to-north: an adult female (Skeleton II) with neonate and a juvenile (Skeleton IV), which possibly compare with the nearby Offham burial. At Staines in Surrey, however, an adult female was orientated north-to-south and recorded as facing north-east, whereas a recently-discovered juvenile female in Berkshire was orientated north-to-south but on the right side and therefore facing west. Finally, at Staines Road, Shepperton, the Early Neolithic burial in the ring ditch of an adult female was orientated, similarly to Skeleton I at Whitehawk, north-west-to-south-east, but on the right rather than left, facing west/south-west. Looking a little further afield into Dorset, to the burial orientations at Hambledon Hill causewayed enclosure, the recorded orientations for the Early Neolithic burials there show some site-specific and inter-site similarities but variety of practice overall. The orientations of all these causewayed enclosure burials are fairly evenly spread across the possible combinations of cardinal and inter-cardinal points although there are possible patterns within and across sites, which are explored further in Chapter 6 in regard to a possible temporal basis for different orientations.

The demographic profile of the Whitehawk human remains assemblage, as highlighted earlier, represents the finds from the very small fraction of the site excavated to date, but nonetheless is interesting. There are equal proportions of females and males, although more females in the articulated group and more males in the disarticulated group. Adults comprise the majority of the assemblage overall as well as both the articulated and disarticulated groups individually, however, immature individuals make up a significant proportion in all cases. Most of the burial deposits are in ditches, often apparently treated in the same way as occupational debris, however, there are three individuals that appear to have received differential treatment. Firstly, Skeletons II and IIa, the adult female and neonate buried, as described above, in a discrete grave within Ditch III; and, secondly, the juvenile Skeleton IV interred in Hole 51, Ditch III. It could, perhaps, be significant that these three individuals were all buried within Ditch III, either in terms of Ditch III's position within the wider context of the enclosure layout as a whole (see Figure 5.21), or in relation to the chronology of the construction of the four ditches that form the enclosure (Ditch IV being the outer one).

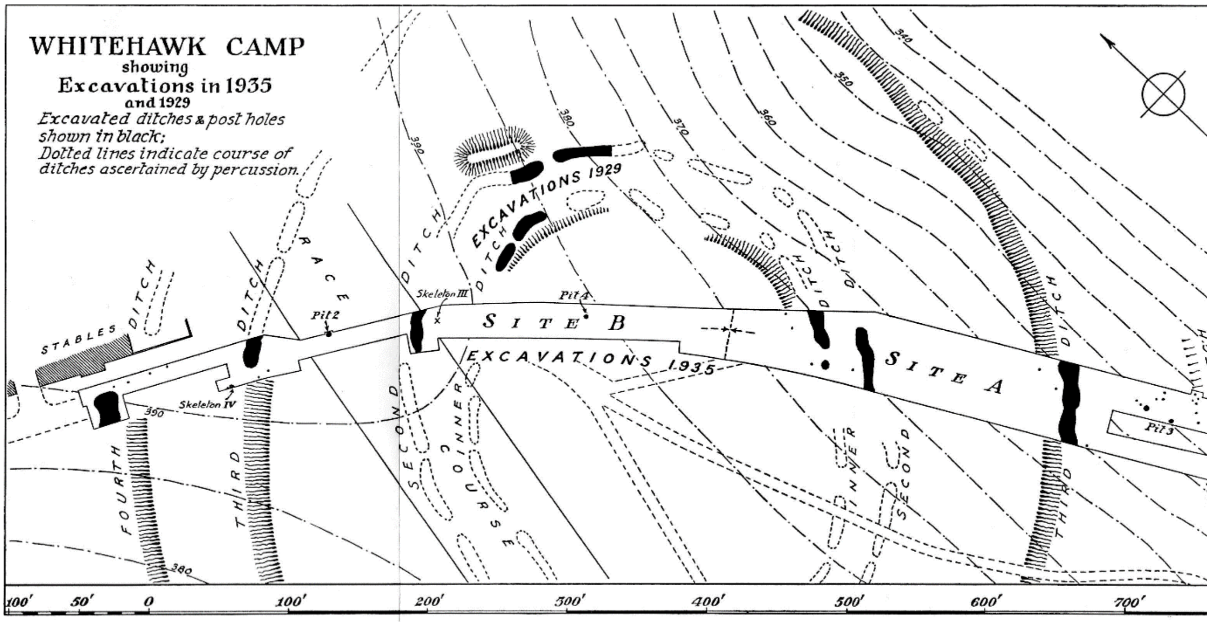


Figure 5.21: Plan of Whitehawk causewayed enclosure showing location of Ditch III (Skeleton IV labelled) (Curwen, 1936:Plate 1)

Although the latter explanation could be explored via dating, the authors of the recent radiocarbon dating programme have cautioned that the resultant chronology is 'less than entirely satisfactory' due to limitations of the datable material in the archive; it can therefore only be safely concluded the four circuits broadly date to between the middle of the 37th century and the end of the 36th century BC with the duration of primary phase being between 75-260 years at 95% probability (Whittle *et al.*, 2011:226).

Further consideration of any potential significance to these three individuals differentiable on the grounds of their burial location within the enclosure site can possibly be sought from their demographic profile. They comprise an adult female aged 18-30 years, a neonatal infant and a juvenile aged 7-12 years, whereas the only articulated adult male burial at Whitehawk, aged 18-45 years, was found between the line of the inner ditch and the edge of the Ditch II on the surface of the undisturbed chalk under only a foot of topsoil (Curwen, 1936:70). The male individual was, however, arranged in a 'contracted' position and orientated east-to-west, facing north with his hands in front of the face. This orientation contrasts with that for the adult female and neonate which were aligned south-to-north; both the female and male adults were on their right sides. It should be noted that the age estimates from the original 1920s and 1930s osteological assessments differ from those arrived at during both the current research and that of the recent reassessment (Ponce, 2015) and these are shown in Table 20. These differences reflect both changes in methodology in the intervening years and the breadth of the standard age ranges used for this research.

Skeleton	Original assessed age	Reassessed age	Allocated age range under reassessment
Skeleton I (female)	25-35 years	17-35 years	18-45 years (Young/Prime adult)
Skeleton II (female)	20-25 years	18-30 years	18-30 years (Young adult)
Skeleton IIa (indeterminate)	neonate	0-1 year	0 years (Foetus/Neonate)
Skelton III (male)	middle-aged	18-45 years	18-45 years (Young/Prime adult)
Skeleton IV (indeterminate)	7 years	7-12 years	7-12 years (Infant 2)

Table 20: Original assessments of age at Whitehawk compared to the reassessment

A further point of interest and possible significance from the burial deposits at Whitehawk is that of an almost complete roe deer found within Hole 5 on the edge of Ditch IV during the 1932-3 excavations (Curwen, 1934:107). The deer was an adult female 'huddled' on its back, partially dismembered and accompanied by a large number of snail shells. The only other pit burial on site was that of the juvenile Skeleton IV in Hole 51, Ditch III, excavated the following season, the similarity with which the excavator remarks upon (Curwen, 1936:73). The juvenile's pit is described as 'unnecessarily deep and narrow' and interpreted as possibly having been a post hole with ritualistic symbolism. Disarticulated roe deer bones are found within the faunal assemblages for the excavations at Whitehawk and elsewhere in Early Neolithic contexts such as Dog Holes cave, Warton Crag in Lancashire (Jackson, 1909) and the Coneybury 'Anomaly' on Salisbury Plain in Wiltshire (Richards, 1990b). The Coneybury assemblage is of sufficient size to have been interpreted as evidence of feasting of some kind and it has been argued that this unusually large quantity of roe deer remains represents variously economic continuity with the Mesolithic (Richards, 1990b), totemism (Reynolds, 2011), a hunting camp (Serjeantson, 2014), or a male maturation ritual (Sykes, 2014:61). Building on these, a study of isotope and aDNA has recently proposed that the gathering was organised by a regional community and that a group of hunter-gatherers living alongside the Early Neolithic farmers brought roe deer rather than cattle to the party (Gron *et al*., 2018). There is evidence of differentiation between the cattle and roe deer assemblages such as sex, place of origin and butchery practice (Gron *et al*., 2018) which could be explained by either or both pragmatic and belief-based concerns regarding domestic and wild species and their roles in Early Neolithic society.

The special treatment given to the roe deer at Whitehawk, in conjunction with the presence of disarticulated roe deer bones in Early Neolithic faunal assemblages, could indeed indicate a symbolic role for this species, however, as an isolated case, it could be explained perhaps more mundanely as a single instance of captivity and consequent special burial treatment.

The burial positions of the articulated individuals at Whitehawk are summarised in Table 21 along with the data from this reassessment.

Skeleton	**Original description of burial position**	**Reassessment of burial position**
Skeleton I (adult female)	Semi-prone	Flexed on left (semi-prone upper body)
Skeleton II (adult female)	Semi-prone	Flexed on right
Skeleton IIa (neonate)	n/a	n/a
Skelton III (adult male)	Contracted	n/a
Skeleton IV (juvenile)	Curled up	n/a

Table 21: Burial positions of the articulated individuals at Whitehawk

A further line of enquiry regarding the demographic profile of the Whitehawk assemblage is the presence of grave goods associated with the articulated burials, which are summarised in Table 22 below.

Skeleton	Demographic data	Associated finds
Skeleton I	Female 18-45 years	fossilised *Echinocorys scutatus*
Skeleton II (+ Skeleton IIa)	Female 18-30 years	perforated chalk pendants, 2 x fossilised *Echinocorys scutatus*, partial ox radius
Skeleton III	Male 18-45 years	3 x Neolithic sherds, land molluscs, 2-3 mussel shells
Skeleton IV	7-12 years	3-4 x Neolithic sherds, incised chalk

Table 22: Grave goods/associated finds from the articulated burials at Whitehawk

Fossilised echinoids are known in southern English folklore as 'shepherds crowns' or 'fairy loaves' and perforated stones and chalk as 'hag stones' and various beliefs exist regarding their significance. It is interesting that the two adult females were buried with fossilised sea urchins and by association also the neonate interred with Skeleton II. There is a relatable example of a 'contracted' burial of a similarly aged female buried on her right with an infant aged around five years, believed to date to the Late Neolithic or early Bronze Age, found in Dunstable, Bedfordshire in 1890, the burial surrounded by around one hundred echinoids (*Ananchytes ovatus* and *Micraster covanguinum*) (Grinsell, 1953:274). A large fossilised echinoid was also found on the base of a passage in the long barrow at Ascott-under-Wychwood and others were found elsewhere during the excavations and have been interpreted as possibly deliberately collected either for their curiosity value or special properties they may have been thought to possess (McFadyen *et al.* in Benson and Whittle, 2007:131: Roe in Benson and Whittle, 2007:316).

Perforated and incised chalk objects were buried with the adult female Skeleton II and neonate Skeleton IIa and also with the immature Skeleton IV, possibly indicating an association with young members of the community, either for the object itself or any meaning represented by the markings in the case of the incised chalk. Further evidence for this can be found at Hambledon Hill where a juvenile (HH76-3046) was buried with two carved chalk lumps (Mercer and Healy, 2008:103). Shells were only buried with the adult male in this assemblage and pottery was buried with the adult male and immature Skeleton IV but not with the adult females (or neonate), and the partial ox radius was buried with the adult female Skeleton II and neonate.

There is, therefore, some observable demographic differentiation in the types of grave goods in this small grouping, some of which is mirrored in the overall dataset for this research and is discussed further in Chapter 6.

Staines

The causewayed enclosure at Staines is a comparable site in this dataset with a human remains assemblage comprising the remains of eight individuals, including one articulated burial and six fragmentary, and a cremation, from five locations in the inner and outer ditches. Again, adults make up the majority of the assemblage but, in contrast to Whitehawk, there are twice as many females in the group, including both the articulated female and the cremation burial.

Female	35-45 years	Articulated
Male	17-25 years	Fragmentary
?	Adult	Fragmentary
Female?	17+ years	Fragmentary
Female?	18-25 years	Fragmentary
Male	25-35 years	Fragmentary
?	Infant	Fragmentary
Female?	Adult	Cremation

Table 23: Human remains from Staines causewayed enclosure (Robertson-Mackay *et al.*, 1987)

The disarticulated burial deposits, including the cremation, are clustered in the north-west sector of the enclosure, suggesting this area held some kind of significance for mortuary activity. The articulated burial, however, is located separately south of the disarticulated remains, towards the centre of the enclosure. This implies differential treatment afforded to articulated burials compared to disarticulated body parts, which ranged from crania and mandible to long bones, including an upper limb with hand. That evidence for violent trauma (see Chapter 6) has been found in the disarticulated assemblage but not in the articulated individual further indicates variety of treatment and potential significance for this individual. Radiocarbon dating has not been successful on the human remains from Staines due to possible humic acid contamination of the bones which, unfortunately, precludes a detailed understanding of the chronology of the burial deposits.

Figure 5.22: Plan of interior inhumation at Staines causewayed enclosure (Robertson-Mackay *et al.*, 1987:58,figure 26)

Archaeothanatological analysis of the interior inhumation at Staines is based upon the plan drawing at Figure 5.22 (a photograph of the burial *in situ* not having been located during this research).

This adult female individual was buried in the interior of the causewayed enclosure, in a shallow pit cut into the gravel beds just inside the inner ditch, orientated north-to-south, on the left, facing east, described in the excavation report as:

> *'*The flexed body lying on the left side had been rather carelessly arranged. The right arm was lying straight down towards the knees. The legs were lightly flexed, the left foot lying over the edge of the gravel. There were no grave goods which could suggest a definite date for this burial*.'* (Robertson-Mackay *et al.*, 1987:51)

The osteological report states:

> *'*All bones present except for some of the small bones from the extremities but generally in very fragmentary condition.*'* (Robertson-Mackay *et al.*, 1987:Microfiche 6)

The use of the phrase 'carelessly arranged' to describe the burial position is interesting from an archaeothanatological point of view as it appears to describe the position upon excavation as being that in which it was originally interred, although this is not necessarily the case. The burial space within the grave appears to be wider than the body which, if not backfilled at the point of burial, would allow skeletal elements to move during the process of decomposition. The apparent retained articulations of several labile joints, such as the ankles, distal joints of the hands and feet and both patellae, along with the articulated spinal column, indicate that the body was in its original burial location. The pelvis appears to have collapsed and disarticulated which, along with displacement of the coxal bones and disarticulation and lateral rotation of the femoral heads from the acetabula, is suggestive of the body having been originally placed on its back in a wide space (Duday, 2009). It is possible that this individual was shrouded, bound or covered and that the legs were placed or fell to the side during the process of decomposition. The atlanto-occipital joint appears to have disarticulated, resulting in the cranium moving laterally at an early stage as the mandible remains in articulation. An alternative interpretation is that the individual was placed on the side, suggested by the flexion of the upper limbs, and that during decomposition the torso fell backwards although this may be harder to explain gravitationally. The preceding analysis is based upon the premise that the positions of the skeletal elements depicted in the plan drawing are accurate. Without a photograph of the burial *in situ* it is not possible to verify this, although details such as the left foot lying over the edge of the gravel are correctly depicted according to the description in the report. Assuming the plan is largely accurate, it can confidently be concluded at the very least that the position of the skeleton upon excavation would have differed in certain ways from that in which it was originally buried which are important to take into account when considering burial position and orientation.

The manipulation and movement of disarticulated human bones is often debated in regard to the Neolithic. Thorpe (1984) identified differences in the skeletal elements present at long barrows and causewayed enclosures in Wessex, with long bones more common at the former and skulls more often found at the latter. In their report on the excavations at Hambledon Hill, Mercer and Healy (2008:515) suggested that the skeletal elements most often found at causewayed enclosures were those that were 'missing' from long barrows, although acknowledged there was no specific pattern to this and agreed instead with Brothwell and Blake's previous observation from Fussell's Lodge long barrow that certain skeletal elements were relatively lacking (Brothwell 1966:62) rather than absent. At Whitehawk the skeletal elements identified in the recent reassessment (Ponce, 2015) comprised 15 skull fragments, 13 long bone fragments, two foot bones, one hand bone and four other post-cranial skeletal elements. The disarticulated material was all scattered in the ditches within an occupation layer and skull fragments were found in all but one of the ditch cuts excavated, including three in a hearth feature which showed signs of charring, interpreted at the time as evidence of cannibalism (Curwen, 1934:111). Furthermore, there is some evidence of cut marks and possible peri-mortem fractures to some of the disarticulated bones (Ponce, 2015; Schulting, 2012).

Where it has been possible to assign a sex to the fragmentary remains there is no apparent bias towards male or female in either the Whitehawk or Staines groups. The age groupings are more clear-cut, however, with a noticeable proportion of the Whitehawk assemblage being immature and not apparently treated any differently to their adult counterparts. It has been argued previously that a bias against child burials could explain the presence of these in causewayed enclosures instead of barrows (Brothwell, 1971:117) as was apparently the case at Windmill Hill where both ditch burials were infants (Smith,1965:136) and Maiden Castle where the only complete skeleton was an infant (Sharples, 1991). The data from this research, however, has found both adults and children buried within the causewayed enclosure ditches. Infants (aged 0-12 years) are found articulated at both causewayed enclosures and non-monumental locations and their disarticulated remains are found at both causewayed enclosures and long barrows; articulated juveniles (aged 13-17 years) are found at causewayed enclosures, long barrows and oval barrows and disarticulated at causewayed enclosures, long barrows and flint mines.

Shepperton

During 1989 excavations at a ditched enclosure at Staines Road Farm, Shepperton in Surrey (Jones, 2008), the burial of an adult female, dated to the Early Neolithic (3640-3110 cal BC, OxA-4061), was found, along with the torso of a further, unfortunately undatable, adult individual. The adult female burial (G10) was found within a ditch segment next to the causeway entrance of the enclosure. Although apparently buried within a pit (Figure 5.23), the excavator was unconvinced of the existence of this feature and felt it was more likely the burial had been placed on the base of the ditch (Jones, 2008:55-57). The burial was recorded as being 'crouched', orientated north-west-to-south-east, on the right, facing south-west. It is notable that a significant proportion of skeletal elements are absent, including apparently all of the labile joint articulations, and the only persistent joint articulations appear to be the knees. The cranium and mandible have fallen laterally, conceivably from their original anatomical position following decomposition of the atlanto-occipital joint, which could indicate unrestricted space around the burial. The flexed position of the lower limbs could result from shrouding or binding. Figure 5.24 shows a reconstruction of the skeletal remains of G10 on display in the Museum of London, which highlights more clearly the condition of the bones and, as with the Whitehawk reconstructions, demonstrates the potential differences between the *in situ* arrangement of the bones and the museum interpretation for display purposes. In this case, the skull is laid on its side in the museum reconstruction whereas it is upright in the grave in the *in situ* photograph and plan, also in the reconstruction the left tibia and fibula are depicted at a less acute angle to the left femur than in the excavation records, the pelvic bones appear to have become more fragmentary since excavation, and there are fragmentary upper limb bones present that are not depicted in the photograph or plan or the burial. Arguably, however, such details are only of concern to mortuary practice researchers!

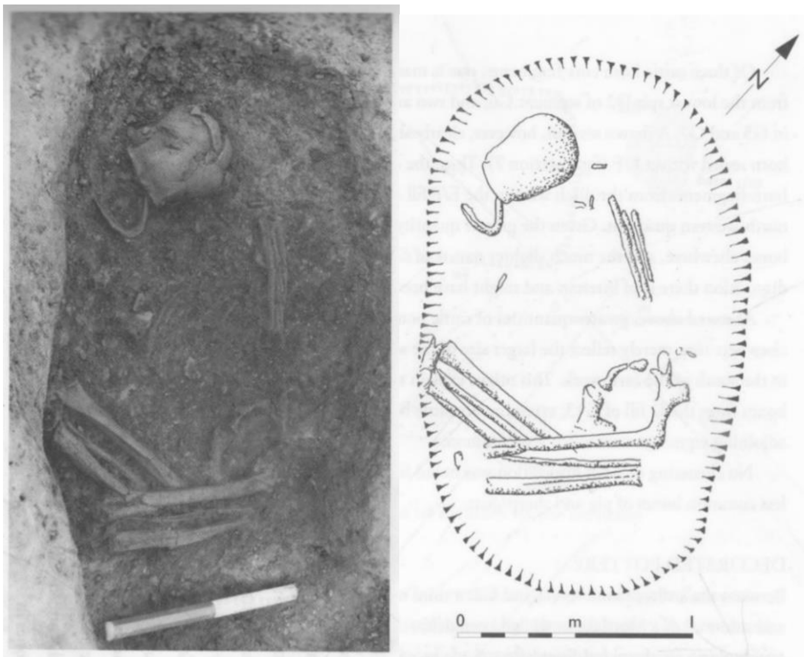


Figure 5.23: *In situ* photograph and plan of Burial G10 at Staines Road, Shepperton, causewayed enclosure (Jones, 2008:13, plate 9 & figure 10)

Figure 5.24: Reconstruction of burial G10 from Staines Road, Shepperton, on display in Museum of London (Photograph: author's own)

Offham Hill

During excavations in 1976, an articulated burial was found in a shallow pit in a causewayed enclosure ditch at Offham Hill in East Sussex where a further five fragmentary human bone deposits were also recovered from the ditches; the burial assemblage is summarised in Table 24. The human remains were assessed by T P O'Connor, then of the Institute of Archaeology, who found Burial 1 to be that of an adult male aged 20-25 years. He described the skeleton as 'lying on its side, facing east' (Drewett, 1977:228).

Figure 5.25: *In situ* photograph of Burial 1 at Offham Hill causewayed enclosure (Drewett, 1977:plate 17)

There were no grave goods. Further human remains were found in the bottom of the ditch terminal by the western entrance to the enclosure comprising merely half the mandible of an adult of inderminate sex, aged 35-40 years. This was briefly interpreted in the report as a possible deliberate burial placement although this seems somewhat tenuous given the absence of any other skeletal elements. It could be that the excavator felt it being a cranial fragment indicated possible ritualistic treatment similar to the skulls in the ditches at other causewayed enclosures, such as Whitehawk, for example.

Further disarticulated remains in the outer ditch comprised a fibula in segment 3, layer 4 of the outer ditch, a diaphyseal femur in segment 2, layer 2, and an anterior segment of a mandible with a few teeth from an adult aged 30-35 of indeterminate sex in segment 2, layer 3. In the inner ditch, segment 4, layer 2, a 2nd phalanx and a rib fragment were found. Therefore, both the articulated burial and half mandible were found in the outer ditch and further disarticulated remains were recovered from both the inner and outer ditch.

The left femur from the articulated burial in the outer ditch returned a radiocarbon date of 3630-3380 cal BC (OxA-14177). Two radiocarbon dates were achieved via samples of charcoal from the inner ditch: from layer 4, segment 7, dated to 3950-3530 cal BC (BM-1415) and from layer 3, segment 2, dated to 3650-3360 cal BC (BM-1414). A construction date for the outer ditch circuit of 3640-3370 cal BC (OxA-14177) was arrived at in the *Gathering Time* project (Whittle *et al.*, 2011:220) on the basis of the articulation of the burial and the absence of any indication that it was cut into already accumulated fills. Molluscan analysis suggests a multi-staged history (Drewett, 1976) and radiocarbon dating indicates that the enclosure was in use during the middle centuries of the fourth millennium cal BC (Whittle *et al.*, 2011:220).

The author's reassessment of the human remains from Burial 1 returned a male individual aged 18-35 years with a stature of 142.09 cm and noted the pathological features identified in the original assessment and the skeletal report attached at Appendix 4. Archaeothanatological analysis is based on the details recorded in the excavation report, the plan drawing and photograph of the burial *in situ*. The burial is described in the report as:

> 'Towards the northern end of the outer ditch a small pit had been dug into the bottom of the ditch and in this was found a burial. The crouched, articulated burial was of a young man in his early twenties. He was very tightly packed into the pit without any grave goods. The head appears to have fallen forward after burial and was badly crushed.' (Drewett, 1977:209)

The appendix contains a short osteological report including the following reference to the burial position:

> 'A single crouched burial was found in a shallow pit in the outer ditch. The skeleton was lying on its side facing east. (O'Connor in Drewett, 1977:288)

The layers of the ditches are described as:

> 'Modern plough soil.
> Fine, brown, friable soil.
> Small, rounded chalk lumps in light brown soil with some large, angular flints.
> Angular chalk lumps in powdery chalk soil'
> (Drewett, 1977:205)

The burial is recorded as having been placed upon a layer of angular chalk lumps. The photograph of the burial in Figure 5.25 shows this uneven surface which may have affected the eventual position of some of the skeletal elements. The photograph shows that the femoral head is displaced from the acetabulum. It is unclear whether the layer of soil, chalk and flints was inserted as a fill at the time of the burial or whether there was gradual filling and silting over time. It could be the case that there was space within the burial pit for the skeleton to slump in such a way as to dislodge the femoral head from the acetabulum after decomposition of the soft tissues thereby altering the position of the left lower limbs in relation to the rest of the body.

The burial is described as being packed tightly into the pit. The position of the cranium gives the impression of having fallen forwards, leaving the mandible behind it and, as per the excavation report, the cranium appears crushed. It could be the case that the cranium was crushed by one of the 'large, angular flints' of the infill. This being the case, it could be interpreted that the flint elements of the infill layer were perhaps thrown into the pit after skeletonisation had taken place. The outline plan of the pit (Figure 5.26) indicates that the cranium could have been in line with the spine originally. The lower limbs are tightly flexed.

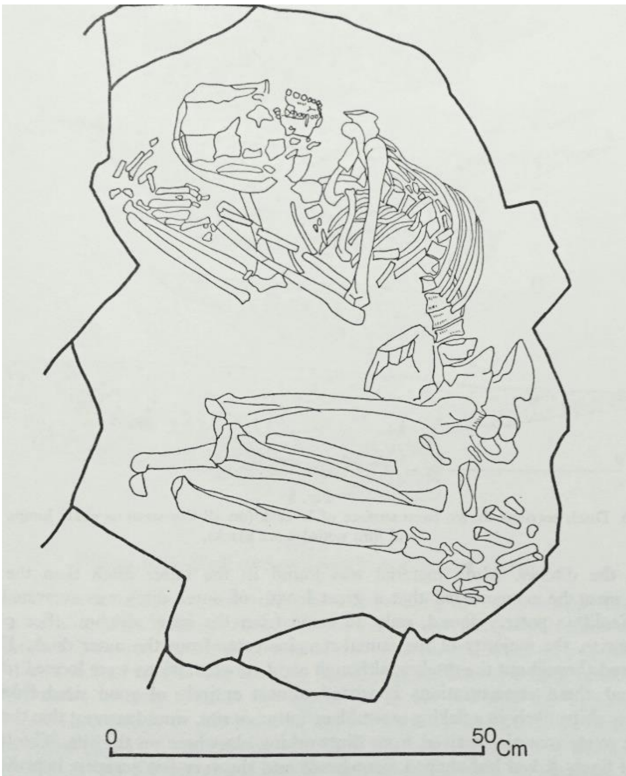


Figure 5.26: Plan of Burial 1 at Offham Hill causewayed enclosure (Drewett, 1977:207,figure 5)

In 'crouched' burials it can be expected to find the ankles articulated as the soft tissues in the knees decompose first, leaving the ankles *in situ*. It is apparent from the plan of the Offham burial that the bones of the feet are not strictly in their anatomical positions, however the same is evident for the hand bones which could be evidence of disturbance from animal burrowing. The height of the pit suggests that the individual was buried on his side rather than in a 'crouched', i.e. squatting position, with a later slump to the side. It therefore seems more accurate to use the term 'flexed' in this case.

Male?	18-35 years	Articulated
?	35-45 years	Fragmentary
?	Adult	Fragmentary
?	30-35 years	Fragmentary
?	Adult	Fragmentary
?	Adult	Fragmentary

Table 24: Burial deposits from Offham Hill causewayed enclosure (after Drewett, 1977)

Bury HIll

The causewayed enclosure at Bury Hill, Houghton, in West Sussex, was excavated in 1979 (Bedwin *et al.,* 1981) and the human remains assemblage comprises six fragments of lower limb bone recovered from the primary silt in a ditch section (Area J): four phalanges, one metatarsal and a partial tibia shaft. Clearly these human remains are extremely limited in quantity, and the only demographic data which it may be possible to glean from them is whether they are from an adult or child. The bones were interpreted as having come from one individual, having been found close together, although there was no evidence for disarticulation having taken place. In association with the human remains were Early Neolithic pottery, waste flint flakes and a few flint implements, along with cattle, pig, sheep and goat bones; it was noted that phalanges were under-represented in the faunal assemblage but that otherwise all skeletal elements were present. The excavation report indicates that the archive includes a complete bone record and that the finds are held in the former Sussex Archaeological Field Unit (now Archaeology South East)'s archive within the Institute of Archaeology, University College London, unfortunately however these have not been located during the current research. Relative dating to the Early Neolithic was based upon pottery typology and radiocarbon dates were subsequently obtained from primary ditch silts, giving the results 3630-3020 cal BC (HAR-3595) and 3640-3130 cal BC (HAR-3596). The relationship of the dated ditch silts to the human remains is unclear from the excavation report. A construction date for the enclosure of 3715-3660 cal BC was obtained recently as part of the *Gathering Time* project (Whittle *et al.*, 2012:242).

Chalk Hill

Human remains have also been found at the Chalk Hill causewayed enclosure in Ramsgate, Kent, excavated between 1997-98 (Clark *et al.*, 2019). Disarticulated remains of two Early Neolithic individuals were found in the ditches: one comprising skull fragments, teeth and long bone fragments from a child aged 4-6 years; the other being skull fragments of a probable adult female aged 16-30 years, radiocarbon dated to 3630-3370 cal BC (UBA-14310). The child's bones were mixed in with animal bones in a placed deposit in a later pit and had old, dry breaks and dry bone charring to the skull fragments and tooth crowns, interpreted as evidence of defleshing, partial cremation or cannibalism; and there were cut marks to cervical vertebrae of the adult female individual suggestive of decapitation (Clark *et al.*, 2019).

Other

Further burial deposits have recently been found at an Early Neolithic monument in Berkshire, currently under excavation by Wessex Archaeology. An articulated juvenile aged 14-17 years was found in a ditch, flexed in a 'semi-prone' position, having been manipulated post-mortem to remove the cranium and left femur and interpreted as not being in either the original burial position or location; there were no grave goods and no evidence of canid gnawing (McKinley, 2018). The second individual, an adult probable male aged 18-30 years, was also found in a ditch and is represented by a cranium lacking facial bones and mandible, with evidence of a knife injury to the cranium (McKinley, 2018). The fragmentary remains of three young individuals have also been found at the causewayed enclosure at Abingdon, north-east of the cluster of Berkshire/Surrey enclosures and geographically close to the Early Neolithic burials at Barrow Hills (Leeds, 1928:476).

Overall, both adults and children are represented in causewayed enclosures with a predominance of females in most cases, especially articulated burials. There is a variety of burial orientations apparent, suggesting this may not have been a primary concern at causewayed enclosures, and some observable patterns in grave goods, which are discussed further in Chapter 6.

<u>Non-monumental</u>

Itchen Farm

The third most frequent burial location in this dataset is classed as non-monumental, one of which is the burial of a child in a flat grave at Itchen Farm, Winchester, Hampshire, excavated in recent years in advance of the South Winchester Park and Ride construction works. The burial is the earliest sign of activity and there is evidence of subsequent Bronze Age and Roman settlements on the site with burials from the Roman and Saxon periods (Lewis and Preston, 2012). The burial (Figures 5.27 and 5.28) was described as 'crouched' and associated with 12 flint flakes, two flint blades, five spalls and 5.5g of small pottery sherds, and there was a large flat sarsen at the feet. There was also a large quantity of charcoal which sampling showed to derive from oak. The skeletal remains were radiocarbon dated to 4082-3971 cal BC (KIA-42095), the earliest part of the Neolithic period.

Figure 5.27: Burial of child at Itchen Farm, Winchester (photograph courtesy of Thames Valley Archaeological Services)

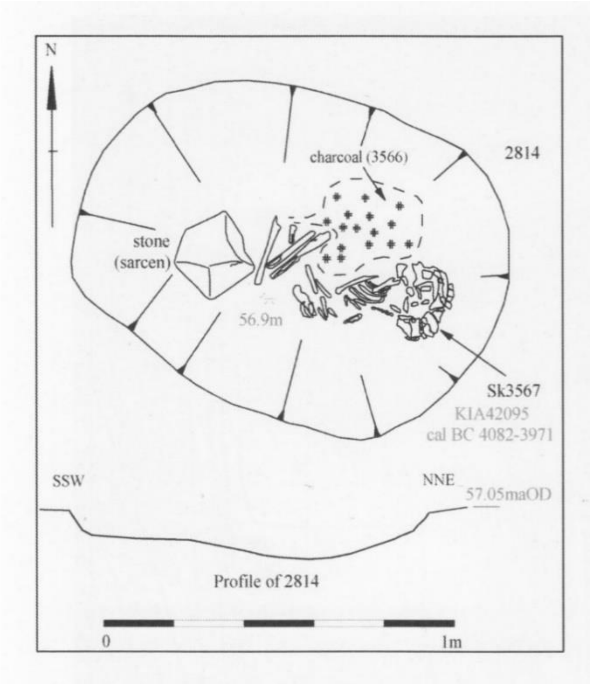


Figure 5.28: Plan of child burial at Itchen Farm, Winchester (Lewis and Preston, 2012:9:figure 7)

The burial was orientated roughly east-to-west and lying on its right side, therefore facing north (the report erroneously describes the body as being on its left side on page 3 but correctly as being on its right on page fifty-two in the human remains section). The author has examined the human remains, which are very poorly preserved, as part of this research. As also noted in the excavation report, the estimated age based on dental development is 4-6 years, and cribra orbitalia was observed in the fragmentary left eye orbit, indicating probable malnutrition or parasitic infection. Archaeothanatological analysis is limited by the poor preservation of the remains but it is possible to observe that the upper and lower limbs appear to be largely in their original position, flexed on the side and restricted to the west by the presence of the large sarsen stone. Not visible on the plan but present in the archive and just observable on the *in situ* photograph are several small fragments of unidentified foot bone, possibly from the labile, distal joints but too poorly preserved to indicate whether these remained in articulation. The only other labile joints possibly present are the tibiofemoral and humeroulnar joints, but again the poor condition makes it impossible to discern any evidence of articulation. The interpretation of the original circumstances of the burial of this young individual, therefore, remains enigmatic but it can be concluded that the child was buried on its right side with the legs flexed and head orientated to the east.

There were a number of Early Neolithic pits elsewhere on the site, both isolated and a small group, the presence of which has been interpreted by the excavators as possible evidence of feasting and gathering but with the unstructured, mundane nature of the contents suggesting a more domestic function, likely representing a form of settlement (Lewis and Preston, 2012:66). Although there was no evidence of a burial mound in relation to the burial, the excavators felt that undated pits to the south of it could potentially have respected a mound, since lost, although the two pits that have been directly dated on site significantly later than the burial (Lewis and Preston, 2012:67).

Yabsley Street

Another recently excavated non-monumental burial is from Yabsley Street, Blackwall, London (Coles *et al.*, 2008). This young adult, probable female individual was described as being in a crouched position, with the head facing the knees, arms flexed, feet together and the spine touching the north edge of the grave with a large, empty area below the feet. The body was orientated east-to-west on the left, therefore facing south. The human remains were again in extremely poor condition due to the acidic nature of the soil and, after *in situ* recording, were removed in blocks for further laboratory analysis during the course of which it became apparent that several skeletal elements survived only as dark stains. As such, the human remains are not available for further research but the Museum of London have provided the author with photographs of the burial *in situ*, one of which is shown at Figure 5.29 and the plan is at Figure 5.30.

Figure 5.29: Yabsley Street burial *in situ* (photograph courtesy of Museum of London)

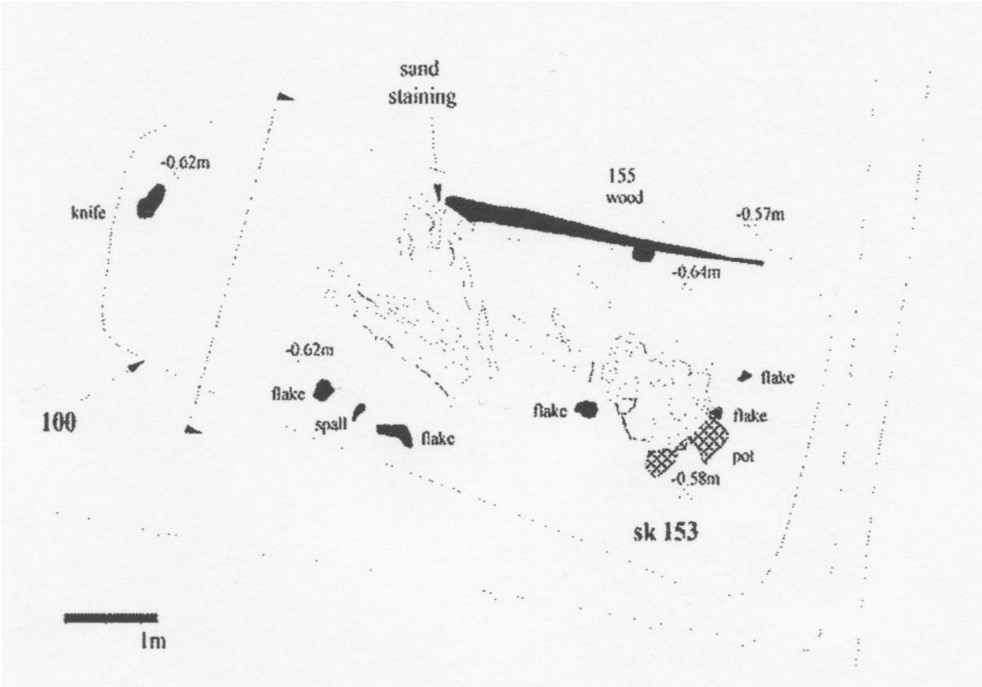


Figure 5.30: Plan of Yabsley Street burial (Coles *et al.*, 2008:219,figure 3)

An oak retaining plank within the grave was radiocarbon dated to 4230-3975 cal BC (KIA-20157), as in the case of the burial at Itchen Farm, to the earliest Neolithic. Also within the grave was a fragment of carinated bowl, a flint knife and other struck flints. The grave, situated on a sand and gravel bar below alluvium on the Thames floodplain, is recorded as having a flat base and a fill of grey-black sand, mottled yellow with charcoal flecks and some burnt flint. Again, the poor preservation here results in limited evidence for archaeothanatological analysis. The excavation report records the presence of several labile joints, including the left hand and both feet, which if articulated could be interpreted as evidence of primary burial, but this is difficult to identify on the photographs. One possible clue is the description of the cranium as facing the knees which could result from post-mortem slumping when the atlanto-occipital joint disarticulated, particularly if the head was originally resting on an organic rest of some kind. This could lead to a possible interpretation of this being a primary burial in an original void.

In addition to a scatter of struck flint and predominantly Early Neolithic pottery found in areas of sand adjacent to the burial, the are indications of Early Neolithic occupation near to the Yabsley Street burial in the form of peat in the vicinity of the Thames foreshore, and the remains of charred plants, both wild and cultivated, dating to the Early Neolithic (Coles *et al.*, 2008).

Battersea

Not far away, at Battersea, a cranium found in the River Thames has been directly dated to the Early Neolithic 3940-3380 cal BC (OxA-1199). Analysis and dating of the 'Thames skulls', which have been recovered since Victorian times as a result of dredging and chance finds, has taken place in recent years with dates ranging from the Early Neolithic to the Anglo-Saxon periods (Bradley and Gordon, 1988; Edwards *et al.*, 2010; Schulting and Bradley, 2013). These are discussed further in Chapter 6.

Whyteleafe

South of London, in Surrey and Berkshire, several other non-monumental burials have been found. In 1898, workmen in the village of Whyteleafe in Surrey found a 'contracted' burial in a pit with grave goods comprising animal bones, a chisel, blunt-ended arrow, saw, and leaf-shaped arrowheads. Unfortunately, the workmen 'threw out' most of the bones, which were subsequently 'dispersed by local children' (Hogg, 1906:127) and only skull and long bone fragments survive in the archive which now resides in Croydon Museum. There was anecdotal evidence from a workman of a further seven similar graves arising during gravel extraction lower down the valley, each apparently containing 'one or two skeletons', but no record of these remained (Hogg, 1906:130-131).

The original assessment concluded that the individual was a man with a 'large and massive jaw' (Hogg, 1906:128) and 'an extremely powerful frame' (Hogg, 1906:129). The report is preoccupied with aligning the individual with other prehistoric skeletons found around that time on the basis of skeletal characteristics, such as the mid-shaft circumference of the thigh being the same as that for the skeleton from Tilbury on the Thames foreshore found in 1883, since directly dated to the Mesolithic period (Schulting, 2013; see Chapter 6). Assessment by the author under the current research estimates the individual to be a probable male of 35-45 years. Radiocarbon dating is currently being carried out by the author (Cansfield and Thorpe, forthcoming). Interestingly, the use of the term 'contracted' when describing the burial position in the report of this burial is explained as meaning 'sitting or crouching', with the knees drawn up towards the head 'as the custom was with Neolithic peoples in Britain, the Continent, Egypt and Australia' (Hogg, 1906:126,127). The pit in which the burial was found was described as being 'beehive shaped' although no drawing of this was included in the report to demonstrate the appearance of this.

Pangbourne

Two further non-monumental burials are held by Reading Museum in Berkshire and have been assessed as part of the current research. A skeleton was found at a residential address in Farmhill, Pangbourne, while a tennis lawn was being laid in 1928 and was assessed by L H Dudley Buxton as a mature female (Piggott, 1929:31). The report mentions wear to the teeth, *platymeria*, *platycnemia* and 'squatting facets', regarding which the museum label reads: '*An expert examination of the bones suggests that the woman squatted a great deal – before chairs were invented'.* This is a good example of the racial basis of anthropological analysis at the time and the report goes into detail about 'this little woman' being of the 'long-headed' Neolithic type (Piggott, 1929:32). The burial was associated with animal bones and Windmill Hill pottery. The author's reassessment estimates the individual to be an adult female aged more than 45 years.

Hoveringham

Further human remains and Windmill Hill pottery were found at Hoveringham, near Bray, in the 1960s on waste tips following gravel extraction. The find was reported briefly in the *Berkshire Archaeological Journal* (Anon, 1964:99) and the museum label refers to a 'probable male, tall, slightly built' individual. The author's reassessment of the disarticulated human remains also found them to be those of a probable adult male but did not find sufficient long bones present to estimate stature.

Eton Wick

Excavations were carried out at Eton rowing lake and along the Maidenhead, Windsor and Eton flood alleviation channel in Berkshire in the late 1980s/early 1990s (Ford, 1993; Allen *et al.*, 2004; 2013). These revealed features dating to the Mesolithic, Neolithic and Early Bronze Age. Human remains were found in different palaeochannels spanning the whole of the Neolithic period and the fragmentary remains of three Early Neolithic individuals are included in the current research: an adult male aged more than 45 years, an adult of indeterminate sex and a probable adult male. Geographically the non-monumental burials at Eton, Pangbourne, Hoveringham, Battersea and Whyteleafe are close to the enclosures at Staines, Shepperton and a recently discovered Early Neolithic monument in Berkshire. The temporality of these is discussed in Chapter 6.

Barrow Hills

Three of the burials from the monument complex at Barrow Hills, Radley in Oxfordshire, dated to the Early Neolithic, are included in the database for this research (summarised in Table 25). These individuals are a 10-12 year old juvenile (5354), an adult probable female (5356) and a mature adult probable male (5352-A). The juvenile and adult female were buried in flat graves to the north-east of the oval barrow at Barrow Hills and, along with an adjacent Middle Neolithic adult male, have been interpreted as comprising part of a small cemetery in use for several hundred years. It has been argued that the burial evidence from Radley (and similarly from Windmill Hill) indicates a tradition of single articulated burials with grave goods between 3700-3100 cal BC, contemporary with other mortuary traditions at earthen long barrows, chambered long barrows, round barrows and monumental and non-monumental sites (Garwood in Barclay and Halpin 1999:275). The grave of the mature male individual was located within a linear mortuary structure.

Age	Sex	Position	Orientation	Side	Facing	Grave Goods
Juvenile	10-12 years	Crouched	S-N	Right	East	Flint flake
Adult	Female	Crouched	N-S	Right	West	-
Adult	Male 50+ years	Crouched	W-E	Right	South	Flint flakes

Table 25: Barrow Hills burial data (after Barclay and Halpin, 1999)

The juvenile was described as being in a 'crouched' burial position on the right side with the head 'facing north'. Observation of the plan (Figure 54) of the burial shows that this terminology refers to the way the individual's face was judged to be looking, although it seems to the author that the body was in fact orientated south-to-north (or, perhaps more accurately, SE-NW) and, as it was lying on the right side, was facing eastwards (or south-east) rather than northwards. The individual was recorded as having its left arm folded and legs tightly flexed with knees placed near the chest, with a blade-like flint near the pelvis (F7 in Figure 5.31). On the basis of the plan drawing of the burial, the lumbar vertebrae and mandible appear to be in their original anatomical positions suggesting this was probably the original burial location. A thin layer of charcoal to the west side of the grave was interpreted by the excavator as possible remains of a wooden mortuary structure and the fill of the grave was sand, gravel and sandy loam. This was described by the excavator as having been backfilled, although whether this took place at the time of deposition or subsequently is open to question. The depicted fragmentary nature of the pelvic bones in particular and the absence of hand and foot bones on the plan make it possible that the body was uncovered, perhaps however shrouded, at least for some time prior to infilling of the grave. Alternatively, the body may have been moved to the grave from elsewhere post-mortem, although the apparent articulation of the mandible argues against this, unless it was deliberately replaced in its correct anatomical position.

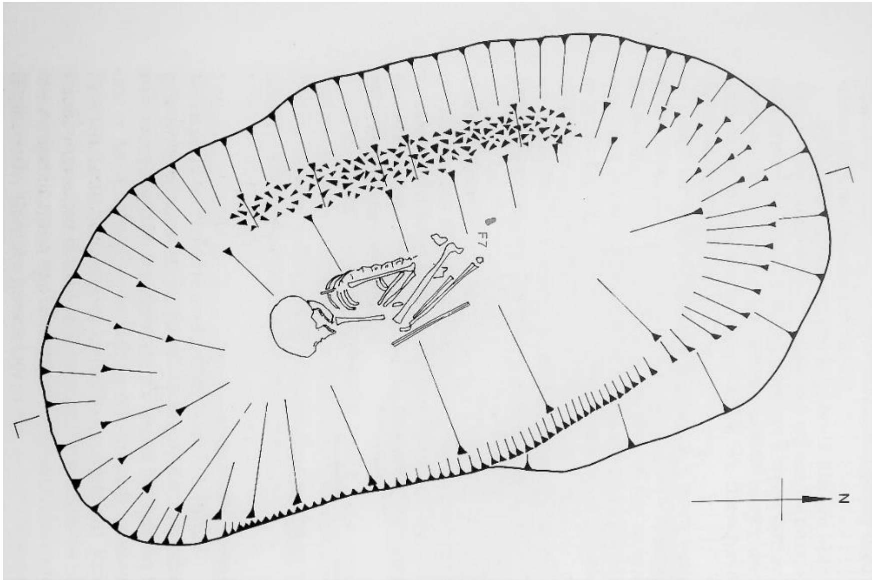


Figure 5.31: Barrow Hills burial 5354 (Barclay and Halpin, 1999:30,figure 3.9)

The adult female (5356, Figure 5.32) is described as being 'crouched' on her right side, orientated north-to-south with legs tightly flexed. There were no grave goods. Unfortunately, the upper body and head were missing, interpreted as a result of previous damage to the grave, and this disturbance is problematic for archaeothanatological analysis. However, the presence of some foot bones close to their original anatomical position may suggest that this was a primary burial location.

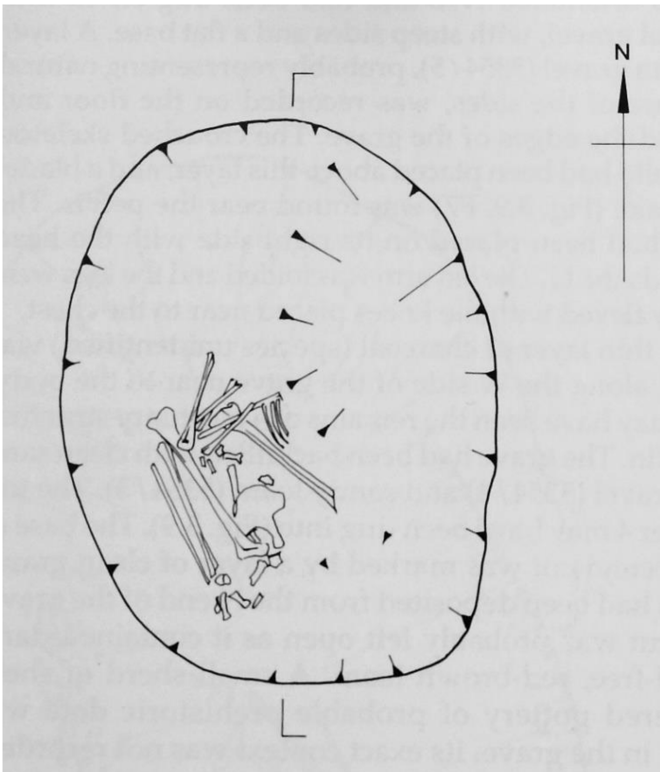


Figure 5.32: Barrow Hills burial 5356 (Barclay and Halpin, 1999:32,figure 3.10)

The adult probable male individual was buried in a flat grave within a linear mortuary structure. He was recorded as being in a 'crouched' position, arms folded across his chest, hands placed near to his face, legs flexed with knees drawn up above the pelvis with his feet below the pelvis. Unlike the previous two contemporary burials at Barrow Hills, he was orientated west-to-east, facing south; however, in common with the other two burials, he was on his right side and, in common with the juvenile burial, he was buried with flint flakes. Interestingly, the orientations of these three burials, when taken in date order starting with the earliest, run anticlockwise through the cardinal points, suggesting that a fourth individual in the sequence would be orientated east-to-west, on the right, facing north. A similar pattern is observable for the burials with discernible orientations in the long barrow as Ascott-under-Wychwood, although this would be even harder to prove to be anything other than a coincidence due to the commingled nature of the remains.

Monkton Minster

Another non-monumental burial resulted from excavations in 1994-95 on the Isle of Thanet in Kent by the Canterbury Archaeological Trust where three probable Neolithic flat graves were found at Monkton Minster, although only one was confidently relatively dated as such and none of the three provided suitable samples for absolute dating (Bennett *et al.*, 2008). The burial is shown *in situ* in Figure 5.33 and the plan is at Figure 5.34.

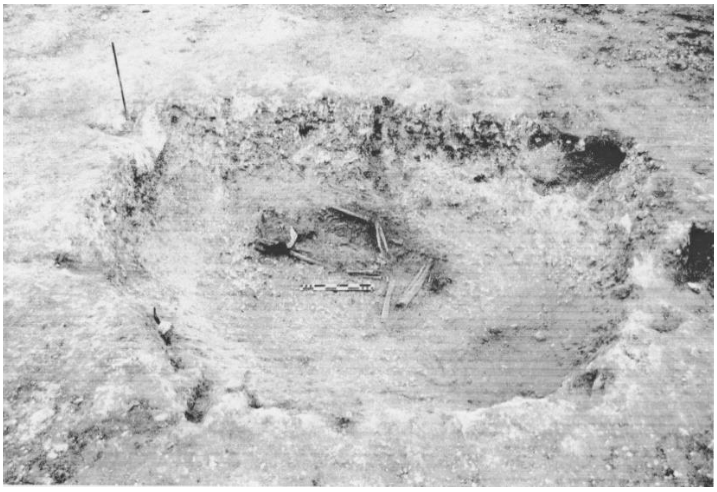


Figure 5.33: Monkton Minster burial *in situ* (Bennett *et al.*, 2008:plate 1/13)

Analysis in the excavation report highlights the low incidence of pit burials in Kent and refers to other examples summarised by Ashbee (2005). The burials listed include an adult male at Nethercourt Farm, excavated in 1949 (included in the database for the current research) and relatively dated to the Early Neolithic period, the whereabouts of which are currently unknown precluding radiocarbon dating. Also listed, however, are several more tenuous examples of

Neolithic burials in Kent, such as a 'crouched' inhumation from a round barrow at Cherry Garden Hill, Folkstone, also found in the 1940s, dated largely on the basis of a 'dolichocephalic' skull shape, a since discredited method; radiocarbon dating recently carried out by the author has returned an Early Bronze Age date (Cansfield and Thorpe, forthcoming). Other examples highlighted include a 'crouched' burial from Acol found during the Second World War and destroyed after examination by the police (Harrison, 1943), several 'Neolithic' burials reportedly found at the Ursuline Convent School in the 19th century (Thanet SMR No 30), of which no skeletal remains or written records appear to survive; none of these have been included in the current research due to their lack of provenance.

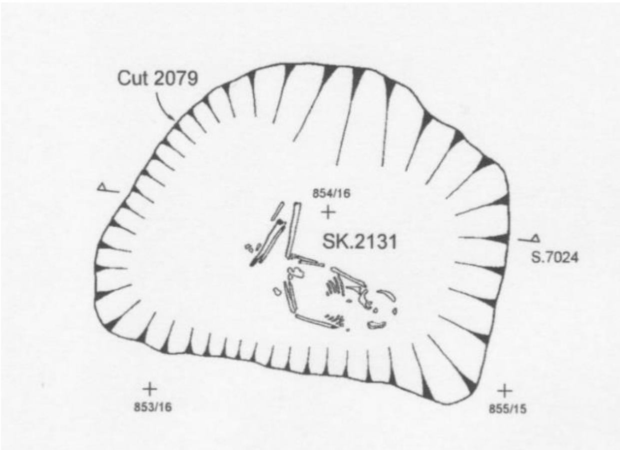


Figure 5.34: Plan of Monkton Minster burial (Bennett *et al.*, 2008:figure 1/4)

The Monkton Minster individual was assessed to be an elderly male in a 'crouched' position, buried in a sub-rectangular grave with steeply sloping sides and a concave but undulating base in an overall space much greater than required for the size of the skeleton, suggesting an alternative previous use. The body was orientated east-to-west on the right side, therefore facing north. Archaeothanatologically, this fragmentary skeleton is difficult to assess. The only observable persistent joint, which would be expected to remain articulated if labile joints are so retained, is the left humeroulnar joint; unfortunately, however, no labile joint articulations are observable. The plan of the burial suggests the upper body was laid on its back with the legs flexed to the right side, evidenced by the lateral fall of the ribs. It could be argued that if the individual was buried on their side in this sloping grave and not immediately infilled, the rib cage and left upper limb would be more likely to remain in that position due to gravity rather than falling backwards.

Yarnton

In addition to the main cluster of non-monumental burials in the North Downs and Wessex Downs (see Figure 4.20) are the two at Monkton Minster and Nethercourt Farm in Kent, the child at Itchen Farm in Hampshire, and finally, one north of the main cluster at Yarnton in Oxfordshire where excavation took place between 1990-91 in advance of gravel extraction. This cremation was found in the top of a pit just outside what had been the east wall of a Neolithic rectangular house which had gone out of use around two hundred years previously (Hey *et al.*, 2016:81). The cremation has been assessed to be that of an adult female and its presence in this location has been related to the previous deposits in the pit, which comprise at least five separate fills including an organic container along with cremated foundation deposits, and have been interpreted as representing a 'powerful evocation of creation and belonging, and later would have enhanced the significance of this place' (Hey *et al.*, 2016:81).

For those non-monumental burials in the dataset where the information is available, orientations are summarised in Table 26. Several of these are orientated east-to-west, with heads orientated to the east but the direction the faces of the individuals point towards, which varies depending on the side on which they are laid, is not consistent.

Burial	**Age group**	**Sex**	**Lying on side**	**Orientation**	**Facing**
Itchen Farm	Infant 1	-	Right	E-W	N
Yabsley Street	Young Adult	F?	Left	E-W	S
Monkton Minster	Mature Adult	M	Right	E-W	N
Nethercourt Farm	Prime Adult		Left	NE-SW	SE
Barrow Hills	Infant 2	-	Right	S-N	E
Barrow Hills	Adult	F	Right	N-S	W

Table 26: Orientations of non-monumental burials

Overall, there are non-monumental burials of adults and children with a predominance of male individuals and these are considered in more detail in the next chapter.

<u>Flint mines</u>

The final burial location in this study is flint mines. Only ten flint mines have been definitely recorded as such in England, located in West Sussex, Wiltshire, Hampshire, and Norfolk. The flint mines with burial evidence included in the database are both in West Sussex. Human remains have also been found in flint mines elsewhere in Britain, at Grimes Graves and Whitlingham, both in Norfolk. At Grimes Graves, Weeting-with-Broomhill, a human skull was found 'wedged between chalk blocks and lying immediately above an ox bone' (Clarke, 1915:48-9 and 69) and a later Iron Age inhumation was discovered to be been inserted. Further east at the extraction site in Whitlingham a skeleton was found in association with antlers in a tunnel (Clarke, 1915:165).

Cissbury

Two skeletons excavated in the 19th century at Cissbury flint mines in West Sussex have recently been subject to reconsideration within wider research of depositional practice at extraction sites

(Teather, 2016). The human remains excavated from Shaft H (Lane Fox, 1876) and Shaft VI (Park Harrison, 1878) have become lost to curation in the intervening years, although the skull from Shaft H is probably one of several currently held in the Natural History Museum collections. The skeleton from Shaft H was originally assessed by Professor George Rolleston of the University of Oxford as an adult female of about 25 years of age, having a stature of 4ft 9in (1.45 m), a diminutive frame and musculoskeletal stress markers consistent with climbing, healed trauma to the right parietal bone and significant wear to all teeth except the wisdom teeth (Rolleston, 1877). Lane Fox's report in the *Journal of the Anthropological Institute of Great Britain and Ireland* (Lane Fox, 1876:357-390) records that, while excavating No 1 Escarp Shaft (also known as Shaft H and later as the Skeleton Shaft), which was infilled with chalk rubble and silt:

> 'Presently a well formed and perfect lower human jaw fell down from above, and on looking up we could perceive the remainder of the skull fixed with the base downwards, and the face towards the west, between two pieces of the chalk rubble.' (Lane Fox, 1876:357-390)

and that,

> 'The bones of the body were found afterwards in the shaft above the skull [which was excavated downwards from the shaft above], so that the woman, for such it was, was placed with the head downwards. The skull, however, had been turned over with the crown up, which may perhaps be regarded as evidence of her having fallen into the shaft.' (Lane Fox, 1876:357-390)

This account was supplemented the following year by Rolleston's report on the human remains which was embedded within a 'Note on the Animal Remains found at Cissbury' in the same journal (Rolleston, 1877:20-36). Rolleston refers to the skeleton being virtually complete and notes the presence of the 'often missing' patellae and fibulae, as well as one of the heel bones [a calcaneus] 1ft 7in (0.48m) above the skull and says that, 'The skull rested on its base and lower jaw…'. Lane Fox's thorough report includes section drawings and plans of the ditches, shafts and galleries at Cissbury including a 'matchstick' drawing of the skeleton *in situ*, depicted upside down as if falling or dangling, with the legs uppermost and the arms pointing downwards.

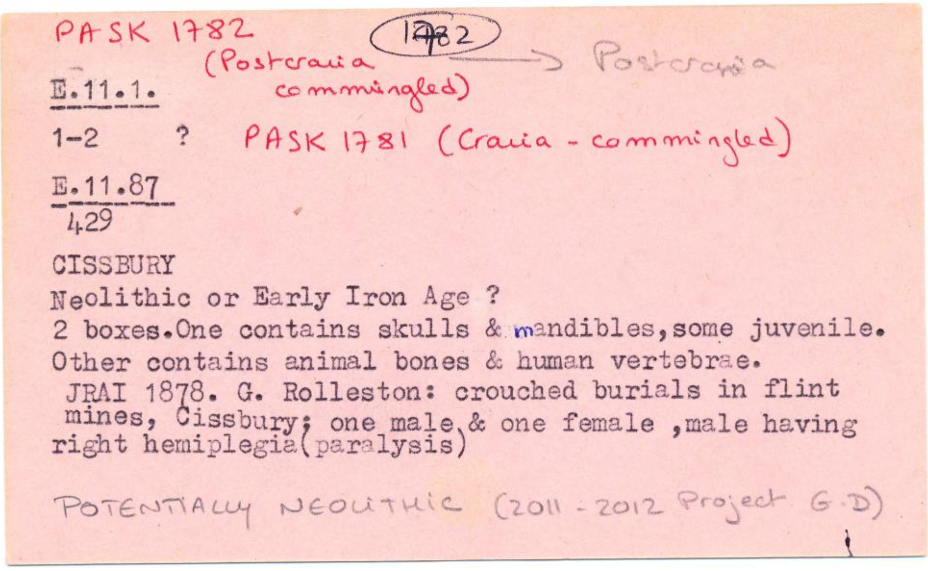
Lane Fox's description of the falling mandible and the cranium being 'fixed with the base downwards' in conjunction with Rolleston's of the skull having 'been turned over with the crown up' have been interpreted as either post-mortem/post-depositional movement of the skull or as deliberate manipulation (Teather, 2016:92). On the basis of the descriptions in the reports alone, the author would argue that an archaeothanatological explanation is the most likely, with gravity combining with decomposition of the temporomandibular and atlanto-occipital joints resulting in the mandible and cranium falling into a void within the chalk rubble below, the cranium coming to rest in an upright position. Lane Fox's account recalls the presence of the mandible being first noticed when it fell from above and, therefore, it was not observed prior to this when its actual position could have been noted; any conclusions on its orientation would therefore be assumptions rather than fact. The record of the skull at Grimes Graves as being 'wedged between chalk blocks in association with an ox bone' (Clark, 1915:165) does, however, imply a possible ritualistic element, although this does not necessarily have any connection with any treatment of the skull at Cissbury.

Rolleston describes the skull of the individual as being of the 'tapeinocepahlic', large, low-lying-headed type and he details cranial and post-cranial measurements. The skull size has been interpreted as more likely of a Neolithic male than female, leading to an interpretation of this being a composite body (Andrew Chamberlain pers. comm in Teather, 2016:92). In the absence of the human remains themselves, these 19th century measurements and drawings of the skull given in Rolleston's report are probably all that can be utilised as osteological evidence for this individual, although the potentially identified skull Sk2249 originally from the Greenwell Collection, now held at the Natural History Museum collection (Figures 5.35 and 5.36 and further details in Appendix 10) could provide further data should it be provenanced.

Figure 5.35: Potentially the cranium from Shaft H skeleton at Cissbury (photograph: the author's)

Figure 5.36: Potentially the partial mandible (on right) from Shaft H skeleton at Cissbury (photograph: author's)

Furthermore, Figure 5.37 shows the museum label from the Natural History Museum identifying Cranium 429 as being one of the Cissbury individuals. Clearly the cranium in Figure 5.35 has been broken and reconstructed at some point whereas the drawings of the skull from Shaft H depict the skull as intact, as does Rolleston's description in his report, leading to a likelihood that the damage occurred in the intervening years, or that it was disregarded for illustrative purposes, if this is the cranium from Shaft H.



PASK 1782 1782 (Postcrania commingled) → Postcrania

E.11.1.

1-2 ? PASK 1781 (Crania - commingled)

E.11.87
429

CISSBURY
Neolithic or Early Iron Age ?
2 boxes.One contains skulls & mandibles,some juvenile.
Other contains animal bones & human vertebrae.
JRAI 1878. G. Rolleston: crouched burials in flint mines, Cissbury; one male & one female ,male having right hemiplegia(paralysis)

POTENTIALLY NEOLITHIC (2011 - 2012 Project G.D)

Figure 5.37: Label from Natural History Museum collection referring to skeletons from Cissbury (photograph: the author's)

The post-cranial measurements in Rolleston's report include those for the clavicles as being: the left 5.4 inches (13.7 cm) and right 4.8 inches (12.2 cm). Rolleston describes the right clavicle as much shorter and less curved than the right (Rolleston, 1877:32,36). When estimating sex via metrical data, one of the measurements that can be used is maximum clavicle length (Stewart, 1979) and in this case both left and right clavicles fall below 13.8 cm, suggesting a female individual. Ideally, however, these measurements would be combined with those for the humeral heads, radial heads, femoral heads, femoral bicondylar widths and the widths of the glenoid fossa of the scapulae, however, none of these measurements were recorded by Rolleston in 1877. It is, however, possible to use his long bone measurements to calculate the individual's stature. The length of the femur is 15.8 inches (40.13 cm) which, when using the formulae in the current methodology (Trotter, 1970) equates to stature measurements of 153.22 cm (5 ft 0 in) for a female individual and 156.92 (5 ft 2 in) for a male individual, demonstrating a larger result using these formulae than those employed in the original 19th century assessment. This reflects changes in methodology over time and significantly increases the estimated height of this individual by 7.5–12.5 cm (3-5 inches), depending on sex. The sex of the individual, however, cannot be certain and, therefore, neither can the suggestion that the remains represent a composite body.

A year after the discovery of the skeleton in Shaft H, a further individual was found in Shaft VI during Park Harrison's excavations, also reported in the *Journal of the Royal Anthropological Institute of Great Britain and Ireland* (Park Harrison and Jeffreys, 1878). It was described as the 'contracted' burial of an adult male, aged around 25 years, surrounded by chalk blocks and large flints, nearly 5 m down in the fill of the shaft. In this case the burial was photographed *in situ* (Figure 5.38), however, the whereabouts of the human remains are currently unknown, although it is possible that the cranium is one of those in the Natural History Museum collection from Cissbury, as described below.

The osteological assessment was again conducted by Professor Rolleston who reported that the skeleton had been laid upon its right side, face to the east [therefore orientated south-to-north] with its knees 'less than half a foot [15 cm] from its chin, with its lower legs bent back upon the upper, and with its forearms similarly at right angles to the long axis of its trunk' (Rolleston, 1879:378). Rolleston assessed the individual as a male aged between 25-30 years who had suffered from hemiplegia as a child, evidenced by a disparity between the upper limb bones, the left being significantly shorter than those on the right (Rolleston, 1879:382). This has been interpreted as a diagnosis of possible poliomyelitis and compared with a further possible example at Lanhill in Wiltshire (Cave, 1938) although this was felt more likely to have resulted from trauma to the elbow (Roberts and Cox, 2003:65). This finding has, however, been contested on the basis that hemiplegia should affect both limbs on one side of the body, and this has led to an interpretation of this individual possibly being another composite body (Teather, 2016:92). It has, however, been argued that cases of skeletal atrophy can be explained by poliomyelitis or cerebral palsy, for example, which can result in restricted paralysis, and the diagnosis of poliomyelitis in osteoarchaeological analyses is most likely if single or paired limbs display severe atrophy without associated infectious or arthritic joint involvement (Brothwell and Brown, 2002:15-16). Although usually associated with the 18[t] century onwards, poliomyelitis is believed to have existed since antiquity and there are depictions on Ancient Egyptian stele of its effects, for example (Waldron, 2009:109). It therefore seems that a pathological explanation for the discrepancy in the limb bones cannot be ruled out. There are, however, other cases of composite skeletons in Early Neolithic burials, such as at Fussell's Lodge long barrow in Wiltshire where, as mentioned earlier in Chapter 2, two burials in 'contracted' positions were each found to comprise the disarticulated remains of two different individuals (Ashbee, 1966; Wysocki *et al.*, 2007).

Figure 5.38: *In situ* photograph of burial from Shaft VI at Cissbury (Photograph: Sussex Archaeological Society)

As with the burial deposit at Wor Barrow, an archaeothanatological assessment of the evidence for these burials has the potential to shed light on original burial positions and potential post-mortem manipulation of the human remains. The current research includes analysis of the Shaft VI burial, based on the details given in the excavation and osteological reports in conjunction with the *in situ* photograph (Figure 5.38). The lack of definition in the photograph makes it difficult to clearly visualise all the labile joint articulations that could suggest a primary burial, however, the left acetabulofemoral joint does appear to be articulated and the right one may also be articulated and what appears to be the right patella seems to be present and only slightly out of position. It is also notable that the mandible and hence the more persistent temporomandibular joint is apparently in its original anatomical position. Helpfully, the photograph in the excavation report is labelled to indicate several key features of the burial including the presence of the left foot, a labile joint, which provides further evidence that this is the original burial location and position of this individual. However, the position of the upper limbs requires particular scrutiny due to the size discrepancy noted by Rolleston (1877). In the photograph, the left humerus has apparently moved anteriorly and overlays the ribs which have slumped inferiorly, as would be expected during decomposition. It has not been possible to ascertain the presence of any hand bones and this is not mentioned in the report. Overall, there are no obvious indications that these skeletal remains represent a composite body and it seems more likely this individual is the primary burial of a single individual.

Rolleston sexed the skeleton as male on the basis of characteristics of the pelvis and the skull (orbital ridges, mastoid processes, parieto-occipital and frontal slopes, mandible) and this view was corroborated at the time by Professor Flower (Rolleston, 1877:388). Rolleston arrived at a stature of 4ft 9in (144.78 cm) calculated from the left femur and 4 ft 11.5 in (151.13 cm) by laying the skeleton out anatomically. Reassessment during the current research using the left femur measurement and the formulae of Trotter (1970) results in a stature of 156.32 cm ± 3.27. The maximum clavicle length measured by Rolleston equates to 129 mm, well below the 138 mm threshold indicative of a female rather than male individual. However, in the absence of other metrical data from the post-cranial skeleton this finding is unreliable. If the cranium from this individual can be demonstrated conclusively to be one of those in the Natural History Museum collection, further data could be obtained. As it stands, as detailed in Appendix 9, the shortlist of two crania most likely to be from this individual were estimated by the author to be of indeterminate and probable male sex, respectively (the latter is shown in Figure 5.39).

Figure 5.39: Potentially the cranium of the Shaft VI burial at Cissbury (photograph: the author's)

A further point of note from the original assessments is the observation that both the individuals from Shaft H and Shaft VI had notably defined muscle insertions indicative of repeated climbing, although this was compared to similarities with certain species of ape (Rolleston, 1877:383), which betrays the overriding concern with racial typology prevalent at the time. Recent research has found that interlimb strength proportions among prehistoric women, including those from the Neolithic, were similar to those for present day semi-elite rowers, suggesting that rigorous manual labour was more significant than terrestrial mobility in agricultural societies over thousands of years (Macintosh *et al.*, 2017).

There are clear similarities between the Shaft VI burial at Cissbury with that of geographically close-by Skeleton II at Whitehawk, such as both being surrounded by chalk blocks, which has been suggested to be a method of segregating individuals deliberately killed, perhaps sacrificially (Teather, 2016:58). Both were young adults, and both were in similarly flexed positions, laid on their right sides, orientated south-to-north, facing eastwards. There is difference however - as far as can be ascertained - in the estimated sex of these two individuals, suggesting perhaps that another factor may have united them in this particular burial treatment. A further example in Sussex of a young female with a neonate in a 'contracted/flexed' position in a defined burial is that of an Early Bronze Age individual from East Brighton Golf Club in Brighton, again orientated south-to-north although on her left side, facing west and surrounded by a layer of flint nodules rather than chalk blocks, with no grave goods (Cansfield *et al.*, 2017).

The grave goods found with female Skeleton II at Whitehawk, as outlined above, comprise perforated chalk, fossilised echinoids and a partial ox radius, whereas the male Shaft VI burial at Cissbury was found with an oval flint axe by the knees (clearly visible in Figure 5.38), eight snail shells, a chalk disc and a fire marked pebble, suggesting difference rather than similarity on the grounds of sex.

Also at Cissbury, while excavating Shaft 27 in 1953, John Pull found a skeleton within the western gallery. Recent radiocarbon dating of the skeleton has returned a date range of 3640-3380 cal BC (OxA-34470) (Teather, forthcoming). The remains were originally presumed to be those of a male victim of a mining accident by the excavator and Dr Ratcliffe-Densham, a local GP who examined the skeleton, whose report has come to light during the current research (Ratcliffe-Densham unpublished manuscript, Worthing Museum Accession Number 1957/386), and reported in the national and local press as such (Russell, 2001:181). However, the remains were subsequently assessed by Dr J C Trevor of the Duckworth Laboratory, University of Cambridge, as that of a female (Trevor unpublished manuscript, Worthing Museum Accession Number 1961/1586/A). The excavator records that 'Three large blocks had killed the man. One had smashed his face, another had driven his right hand into his chest, and broken the left humerus, a third had broken his back just above the pelvis' (Pull, unpublished manuscript, Worthing Museum Accession Number 1961/1586, noted in Russell, 2001:181). Unfortunately, the skeletal remains in the archive are currently somewhat depleted, with some elements on display as part of a composite skeleton in Worthing Museum and others apparently lost. It is, therefore, not currently possible to further investigate most of the bones noted by Pull in his report. However, the author's reassessment has also found the individual to be an adult female, based on characteristics of the skull, aged between 17-25 years. There are three areas of post-mortem trauma to the cranium, one of which is shown in Figure 5.40, likely to have been sustained during the early dry bone phase, probably resulting from the pressure of material resting on top of the cranium (Tucker, 2018 based on observation of photographs). This indicates that the individual's cause of death was something other than a mining collapse, as has been previously suggested (Topping, 2005:76-77).

Figure 5.40: Area of post-mortem trauma on cranium of Cissbury Shaft 27 skeleton (photograph: the author's)

The skeleton was found on its left side with the legs slightly flexed, lengthways across the entrance to Gallery 1, a location which, it has been argued, may have been deliberately intended to block or seal off the gallery (Russell, 2001:183). The body was found in association with a leaf-shaped arrowhead, perhaps but not necessarily connected to the individual's demise, and four pieces of decorated chalk. There was also a quantity of charcoal near to the bones of the right hand which was interpreted as the remains of a torch (Pull, unpublished manuscript, Worthing Museum Accession Number 1961/1586, noted in Russell, 2001:183). Although this is feasible in the context of death resulting from a mining accident, it is less convincing in the now more probable interpretation of a deliberate burial. More likely, perhaps, is that the charcoal marked a small fire symbolically or pragmatically connected with the deposition of the body. The presence of the flint and decorated chalk artefacts further suggest this was the original and final resting place of this individual.

Archaeothanatological analysis of the burial is based upon *in situ* photographs including those shown at Figures 5.41 and 5.42 and others supplied by Worthing Museum. The burial position was described by the excavator as being 'knees flexed and the thighs crossed' (Pull, unpublished manuscript, Worthing Museum Accession Number 1961/1586, noted in Russell, 2001:261). Examination of the photographs indicates that the right pelvis and right humerus may be in their original anatomical positions, and the right tibiofemoral joint appears to be in articulation. The right radius or ulna is flexed at 90^{0} across the abdomen. The absence of some joint connections, such as the finger and toe bones which were later recovered from the gallery fill, does not necessarily indicate a secondary burial location. This could instead be due to the circulation of animals or water, the collapse of the burial space, or human intervention, generally a long time after deposition when all the ligaments have disappeared (Duday, 2009:28). Therefore, given the presence of the labile joint articulations of some hand and foot bones in this case, it seems probable that the individual was deposited or left in the location where the skeleton was found.

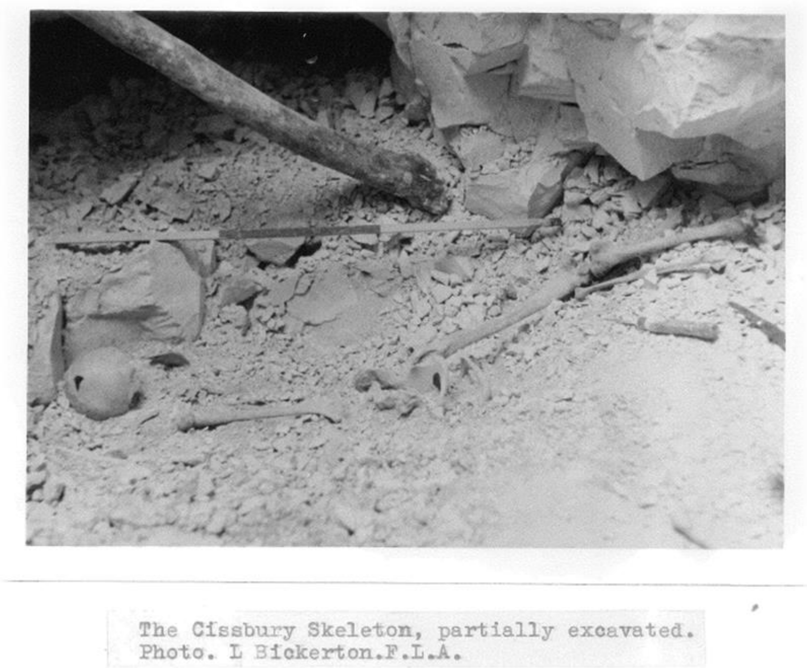


Figure 5.41: Shaft 27 skeleton at Cissbury *in situ* (photograph courtesy of Worthing Museum)

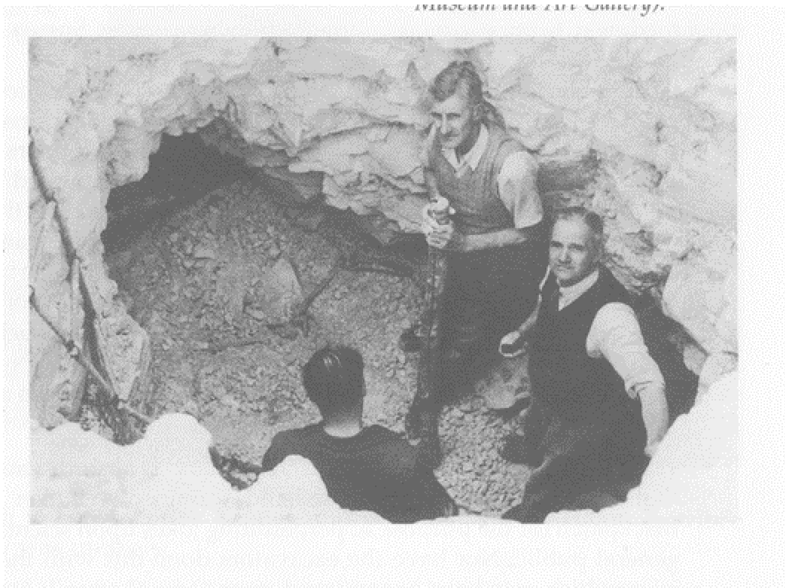


Figure 5.42: Shaft 27 skeleton at Cissbury *in situ*, pictured with excavators (photograph courtesy of Worthing Museum)

Blackpatch

The flint mine complex at Blackpatch, also in West Sussex, was excavated by Pull over ten years from 1922 to 1932, during which time he and his team opened at least nine shafts, four flint working floors, twelve round mounds and a number of other, related features (Russell, 2001:24).

Within the upper fill of Shaft 4 was found an adult femur in association with an antler, and a child's mandible. Pull suggested that the bones were part of a more formalised burial deposit to the west of the shaft which had been greatly disturbed by mining activity (Pull, 1932:56). However, it has subsequently been argued that it is unlikely the miners would have caused such disrespectful disturbance given the evidence for ritual deposition elsewhere on the site and instead the bones may have been disarticulated deposits such as those found in Early Neolithic enclosure ditches (Russell, 2001:39). The antler from the fill of the gallery where the adult femur was found was radiocarbon dated by the British Museum in the 1960s for its flint analysis programme to 5090 ±130 (Barker *et al.*, 1969a) which calibrates to 4231-3645 cal BC (BM-290). A recent reconsideration under the *Gathering Time* project felt that these dates were 'at least broadly accurate' despite their large standard deviations (Whittle *et al.*, 2011:255).

Within Barrow 1, cremated human remains were found with charcoal, interred within the centre of the pit and covered with a layer of broken chalk, its location indicating that the burial was made when mining was still in progress (Russell, 2001; Whittle *et al.*, 2011). The remains comprised a 'small quantity' of cremated human bone, charcoal and fire-cracked flint and did not appear to have been burnt *in situ*. In close association with the cremated remains was a 'Cissbury-type' flaked axe, a scraper, a flint knife and a possible worked chalk object. It was felt by Pull, due to the stratigraphy, that the burial must have been contemporary with a period of mining activity (Pull, 1932:58).

In Barrow 3 the remains of three individuals were found. A 'very young male', as evidenced by unerupted 3^{rd} molars (the reproduction of the transcript of J H Pull and C E Sainsbury's excavation notes (Russell, 2001:60) highlights the absence of '4^{th} molars' [sic] as evidence of youth) was found on a flint platform in a 'contracted' position on its left side, head to the north, face to the east, hands up to the face. To the west of the skeleton, behind the shoulders, was a leaf-shaped arrowhead, typical of the Early Neolithic (Russell, 2001:60; Barber, 2005), a large chopper and an ovate implement; near the head was a Cissbury-type axe and a wild boar tusk, and to the east of the skeleton was a large Cissbury-type axe. Land snails and ox teeth were also found in association with the skeleton. Nearby was the skeleton of a young female, again with unerupted 3^{rd} molars (again the transcript erroneously states it was the '4^{th} molars' which were unerupted), upon a layer of chalk rubble. It was thought that the individual had been laid in a contracted position on her left, head to the north and face to the east, hands to the knees. There was a large block of tabular flint over her lower jaw, incised on its underside with an incomplete circular mark, its horns pointing northwards; further large tabular flints covered the other bones. In association with the burial were land snails and a Cissbury-type axe and ox and pig teeth to the north near the head (Russell, 2001:61). The cremated remains of a third individual were scattered to the south and east of the centre of the mound, some of them over the other two burials.

The Blackpatch human remains, which were accessioned to the Royal College of Surgeons, are largely believed to have been lost during World War II bombing. However, during the course of this research the author has examined the remains from Shafts IV and 7 held by Worthing Museum. Described originally as an adult femur and child's mandible, the human remains in the archive were assessed by the author to be fragments of an adult mandible and three loose, very worn teeth, along with 74g of cremated bone from Shaft 7.

At flint mines there is, therefore, evidence of burials of adults, possible children, and both sexes with intriguing elements of mortuary practice at these enigmatic Early Neolithic burial locations, as is the case also at barrows, causewayed enclosures and non-monumental locations. The following chapter pulls together the evidence from this and the preceding chapter to characterise the variety of mortuary practice and its demographic elements for the Early Neolithic period in south-east England.

CHAPTER 6 - DISCUSSION

This chapter discusses the main themes arising from the evidence outlined in Chapters 4 and 5, considering the nature of mortuary practice in the Early Neolithic of south-east England on a demographic basis, in the areas of palaeodemography, burial locations, disarticulated burial deposits, burial positions, deviant burial practices, burial orientations, grave goods and pathology.

Palaeodemography

The burial data for this research is necessarily based on estimated biological sex and age. Inevitably there is a proportion of individuals within the database whose sex could not be estimated satisfactorily, resulting in their being recorded as of 'indeterminate' sex, as is the usual practice in human osteological assessments. For those individuals where a biological sex has been arrived at, for the database as a whole, the proportions are 59% male and 41% female. When articulated and disarticulated burials are considered separately, the proportions are in both cases very similar to the overall group, again indicating the presence of more males but not dominantly so. However, it must be borne in mind that the remaining proportion of individuals of indeterminate sex, if sexed, could, of course, fall into either the male or female groups, potentially either altering or maintaining the balance; these figures are therefore crude prevalence rates.

It is generally accepted that biological sex, which is possible to estimate from skeletal remains, may differ from gender, which is a person's social identity arising from the significance placed upon those biological differences (White and Folkens, 2005:385; Mays, 2010:81). Furthermore, it is increasingly recognised that the traditional view of a binary male or female biological sex is too simplistic to cover the variety of human experience which is affected by many factors such as genitalia, chromosomes and DNA. However, despite these caveats, by working with the data that it *is* possible to obtain from past populations, a deeper understanding can be gained, albeit without the nuances that would be more detectable in a present-day population. It is worth highlighting that a trained individual using diagnostic skeletal elements to estimate sex in adult human remains can expect to achieve 80-90% accuracy (White and Folkens, 2005:386) or 98-100% accuracy when all cranial and post-cranial traits are present (Buikstra and Mielke, 1985), which unfortunately is unusual in Neolithic assemblages. Both are significant proportions that support the validity of such assessments, but this also highlights the room for error. In osteological studies, up to a point, certain generalisations can be made, such as female skeletons usually being smaller and lighter than males, however there is always normal variation resulting in smaller males and larger females. The most reliable skeletal elements on which to base estimates are the skull and pelvis (White and Folkens, 2005:386). An issue with sex estimates undertaken a century or more ago, as is the case for some individuals in this dataset, is a tendency to rely too heavily on generalisations, particularly in the context of incomplete skeletal remains, at times reaching tenuous conclusions affected by interpretative bias, such as the individual from Shaft 27 at Cissbury flint mine, originally assumed to be a diminutive adult male on the basis of it being in a mining context but reassessed as an adult female (Trevor, unpublished manuscript; Worthing Museum ACC No 1961/1586/A), a conclusion confirmed by the author during the present research. It has been argued that the original interpretation was swayed by gendered bias at the time, pigeon-holing mining as being a masculine activity (Russell, 2001:240). When no reassessment has been made, the original conclusions are then the only record of the sex and age of human remains so these old identifications and often, alongside this, questionable dating based on since outmoded techniques such as craniology or burial positions, become the record. This perpetuates over time and is used as the basis for further research and theoretical argument, building and expanding on the original assessments, which may not be reliable due to the passage of time and indeed may never have been accurate in the first place. This highlights the great importance of revisiting archives and looking at the evidence with fresh eyes, using the proven techniques of the modern day and, subject to practical issues such as suitable samples being available and funding being obtained, this can be supplemented by the scientific analysis now possible, for instance aDNA analysis to obtain definitive sex determination.

Gender and sexuality have been more widely considered in archaeological interpretation since the transition in the theoretic paradigm from processual to post-processual approaches and assumptions about gendered identities questioned, particularly in relation to the roles of women in the past (Croucher, 2012:157; Edwards and Pope, 2013:462). When considering the Early Neolithic period specifically, it has been suggested that the division of labour became more prevalent as a result of domestication (Kuhn and Stiner, 2006:954). However, it has been argued that gender may have been experienced differently in the past as less important in defining identity or personhood than it is today (Croucher, 2012) and that factors such as age, class, ethnicity, physical ability or disability, knowledge and skills were of greater or equal concern (Voss, 2009:30). It has been proposed that Neolithic gender specifically was fundamentally different to that which came afterwards and was contextually based, developed through the cultural facets of houses, villages, monuments and burials (Robb and Harris, 2018:128). Females in the current study comprise a significant proportion of the overall total and, whatever the criteria were for burials that survive in the archaeological record, they seem to have applied to both genders to a greater or lesser extent. This would seem to be consistent with the argument that the sexes were equal at least until farming became widespread (Ehrenberg, 1989:105; Dyble *et al.*, 2015) and also that the legacy of male bias in past archaeological interpretation (Bruck, 2001) should be borne in mind when considering evidence from the archaeological record. There is evidence of differential treatment between the sexes, however, such as the finding that in long barrows male deposits outnumber female ones three times over (Thorpe, 1984; Schulting, 2009) and the spatial arrangement of body parts by sex at Fussell's Lodge long barrow (Bayliss and Whittle, 2007:67; Mays, 1998:29). Had there not been a number of recent reassessments of large burial assemblages such as Fussell's Lodge, it could be argued that the sex estimation data on which these conclusions were based was potentially flawed, however, the evidence does indicate differentiation in some cases. A significant development in recent years has been the use of DNA analysis which is providing valuable data on ancient populations. A genetic study has identified an effective increase in the female population during the Neolithic transition in Europe, compared to the male population, which has been interpreted as resulting from different demographic histories due to shifts in cultural practices and lifestyles, such as the move to sedentism and an increase in patrilocality (Rasteiro and Chikhi, 2013). More studies of this type will further add to the history of Neolithic populations.

The database for this research, which inevitably records age-at-death, shows a clear dominance of adult burials at around 79% of the total for the whole group and very similar proportions when split by articulated (80%) and disarticulated (79%) burials. A predominance of adult human remains in Neolithic mortuary settings has been discussed previously (e.g. Thorpe, 1984). Children do, however, feature in the data for this study and comprise 21% of the overall total, and 20% of the articulated and disarticulated/fragmentary burials. Although it is widely believed that childhood mortality in prehistoric populations was high (e.g., Darvill, 2010:124), palaeodemographic data suffers from an under-representation of children due to lower preservation potential and lower likelihood of recovery of their remains (Chamberlain, 2006:89). There is a lack of comparative Neolithic palaeodemographic data, however, recent research on Iron Age demography has revealed a pattern that demonstrates a curve with a comparatively large number of the youngest children, followed by a smaller number of older children and fewer again in the juvenile age range (Burmeister, 2018:7), which differs from the findings of the current research where the age at death groupings in ranked order of the highest number of individuals comprise: 7-12 years, then 13-17 years, 1-6 years and 0-1 year. The data for adult age-at-death in this study, however, aligns with the Iron Age findings (and also those for later Celt, Germanic, Slav, Viking and Roman populations), with the biggest group being young adults, then fewer older adults and fewest mature adults; reasons posited for this pattern centre around the risks and hazards people are exposed to during different life stages (Burmeister, 2018:7).

Whereas the sexing of adult skeletal remains using osteological techniques can be highly accurate, as mentioned above, in juveniles the results are usually considerably less accurate due to the high degree of overlap in sexual dimorphism, making this unreliable and therefore it has not been attempted in this research. However, DNA analysis, where practicable would provide valuable data on possible gendered aspects of mortuary practice in juveniles and could be used to challenge previous interpretive assumptions regarding such factors as gendered grave goods and infanticide, for example (Lewis, 2011). Potential explanations for under-representation of children in the Neolithic include taphonomic processes affecting the survival of bone from younger individuals (Bello and Andrews, 2006) and cultural choice regarding burial rites (Murphy and Le Roy, 2017). A significant body of archaeological and ethnographic evidence strongly suggests differential funerary treatment of the younger members of society, in terms of location particularly, and this is discussed further below. It has been found from worldwide Early Neolithic cemetery data that during the transition to farming there was a major and sudden increase in juvenile burials (Bocquet-Appel, 2011). This has been explained as resulting from an increase in maternal fertility and birth rate due to energy gain from the higher carbohydrate diet of early farming communities coupled with an increase in mortality likely due to an epidemiological transition resulting from animal husbandry (Bocquet-Appel, 2011).

Life tables, or discrete time survival analysis, can give more detail on average life expectancy. For this dataset the highest life expectancy of 43.36 years applies to infants aged 0-6 years. Probability of death is highest in the 18-30 age group which is also the age group in which the average years lived within and beyond is highest if individuals survive to this stage. To put this in broad context, in 2016 (for which the most recent figures are available) an individual born in Britain had an average life expectancy of 82.9 years if female and 79.2 years if male (Office for National Statistics, 2018), that is around 40 years longer than was the case in the Early Neolithic in south-east England. As comparatively recently as 1841 (when figures were first recorded), however, life expectancy in Britain was very similar to that for this Early Neolithic dataset at only 42.2 years for females and 40.2 years for males (Charlton, 1997:17; Office for National Statistics, 2015). Life expectancy in the Iron Age has been calculated as 25-35 years (Burmeister, 2018:7). Factors influencing the variations in life expectancy could include pathological disease, disability, violent trauma, pregnancy and birth, and genetic predisposition. An osteological study can potentially identify many of these, however, further detail could be arrived at via DNA testing of suitable samples, which could also provide definitive sexing.

That people lived shorter lives in the past is often stated, for example that early humans rarely passed 40 years of age and only exceptionally passed 50 years (Vallois, 1961:222). However, more recently, it has been argued that it may not necessarily have been the case that everyone in ancient societies died at what would now be considered a young age. Cave and Oxenham (2016) have developed a methodology, based on their research into Anglo Saxon cemetery assemblages in Hampshire, Essex and Kent, whereby individuals aged over 45 years (the usual general upper age category in osteological studies, including the present one) have been allocated to four new age categories ranging from the mid-40s to mid-70s using evidence from dental attrition, thus giving context to individuals previously 'invisible' in osteological studies not normally sensitive to traditional age-at-death estimation methodologies currently available. The method is based on assessment of occlusal tooth wear and centres around the principle that this is significantly correlated with age and that a sampled population can be seriated from youngest to oldest based on the degree of attrition (e.g. Lovejoy *et al.*, 1985; Walker *et al.*, 1991); wear is most regular on the 1st and 2nd molars and therefore these are used for the assessment (Cave and Oxenham, 2016:167). This approach could be considered for the mortuary population of the current research, however, a number of individuals lack any dentition at all, or specifically the 1st or 2nd molars, so the best case would be to analyse a representative sample.

Cave and Oxenham (2016) found that it was the females buried in the Anglo Saxon cemeteries in their study who lived to the greatest age, contrary to the popular belief that women lived shorter lives in comparison to men in the past due to the hazards of pregnancy and childbirth. Although it is thought there would have been high mortality rates connected to childbirth in the past, these are uncommon findings in the archaeological record with only about 20 published cases of death during pregnancy or labour, as evidenced by the burial of adult females with foetal remains (Lieverse *et al.*, 2015; Hogberg *et al.*, 1987; Arriaza *et al.*, 1988; Slaus, 2000).

Assumptions are sometimes made regarding the apparent burial of a mother and child, not least that they are in fact related, but also that they represent death during childbirth. Skeletons II and IIa at Whitehawk are a good case in point, having been interpreted in this way without supporting evidence (Fowler, 2010:7) despite doubts raised in the original excavation report regarding the size and development of the neonate (Curwen, 1934). Evidence for other neonates in the current research comprises the proximal end of the fibula of a pre- or just post-natal infant in a ditch at the causewayed enclosure at Staines in Surrey (Robertson Mackay, 1987), and the remains of a 38-40 week neonate, interpreted as having been *in utero*, from among the stones just above the main burial deposit in the long barrow at Ascott-under-Wychwood (Benson and Whittle, 2007). These youngest members of society are therefore very rare members of the burial assemblage and it seems wise to take care in the interpretation of their presence and the circumstances leading to this.

The most common age ranges recorded in the database for causewayed enclosures are 18-30 years and 18+ years; there are no records at causewayed enclosures of mature individuals aged over 45 years. This could be interpreted as evidence that burial populations at causewayed enclosures are predominantly young although the combined proportion for children (0-17 years at death inclusive) is 28% whereas for those aged over 18 years it is 72%, demonstrating four times as many young adults than children. Of course, the cut-off used for this calculation is based upon biological maturity and in the Neolithic the societal age of maturity may well have been different and likely lower, which would skew the proportions even further in favour of a predominance of young adults.

Burial locations

Burial deposits in this study are found at long barrows, causewayed enclosures, non-monumental locations, oval/round barrows and flint mines. Taking the complete dataset of 136 individuals, both articulated and disarticulated/fragmentary burial deposits, exactly half were found at long barrows, with just over a quarter at causewayed enclosures. These figures are not unusual in the context of previous research (e.g. Thorpe, 1984; Schulting, 2009:2), however, the proportion of non-monumental burials (12% overall) is worthy of note. These essentially include those burials not located in recognised monumental locations and are often isolated examples in individual 'flat graves'. As might be expected, when looking specifically at articulated burials, the proportion of non-monumental flat graves is higher at 23% of the overall total than disarticulated deposits at these locations; this is the same proportion as for causewayed enclosure burials and slightly less than for long barrows. There are significantly more articulated males buried at long barrows than articulated females who are most often found at causewayed enclosures. In his analysis of Neolithic burials in Wessex, Thorpe (1984:56; 1994:161) found that both females and males were represented but that males dominated the assemblages. In the current study, on the Wessex side of the south-east region, of those individuals that were sexed, the proportion of males in long barrows is significantly higher than females, however, there is little difference when looking at the sexes in causewayed enclosures or non-monumental locations (although it should be noted that these contain far fewer individuals). On the eastern side of the south-east region the numbers are lower overall, but the proportions of males and females are fairly equal for both long barrows and causewayed enclosures whereas only males have been identified in non-monumental locations (and there is one individual of indeterminate sex). This suggests there may be differentiation in burial locations on the basis of sex towards the western side of the region.

For the region as a whole, articulated female burials are most common at causewayed enclosures, followed by flint mines and non-monumental locations, and least frequent in barrows. This contrasts with articulated males who are most often deposited in long barrows, followed by non-monumental locations. This apparent differentiation in mortuary treatment of adults on the grounds of sex could indicate a correlation between the functions of causewayed enclosures and barrows and the perceived roles of men and women in Early Neolithic society. However, as discussed above, the differentiation may not be as simple as that and may reflect a social organisation peculiar to the Early Neolithic and different to that which followed in subsequent eras, up to and including the present day (Robb and Harris, 2017).

The function of causewayed enclosures has been extensively debated with various different interpretations proposed, including settlements of some kind and meeting places for various activities (Thomas, 1999:38), and the presence of human remains has facilitated debate around the significance of mortuary practice in this setting (e.g. Thomas, 1999:40; Bradley, 1984:24; Edmonds, 1993:115; Mercer and Healy, 2008). It has been argued that causewayed enclosures were the setting for violent encounters and other antisocial behaviour due to the opportunities presented by gatherings taking place there (Cummings and Harris, 2011:374) and there is certainly evidence for violence at the causewayed enclosures in the data for south-east England (see Pathology and Trauma, below). The majority of the discussions about causewayed enclosures, however, focus around their function in a general sense with less specific consideration of any demographic differentiation of the human remains themselves. It has been observed that articulated burials tend to be later in date than disarticulated deposits at causewayed enclosures (Oswald *et al.*, 2001: 126). Unfortunately, however, this cannot be tested in the data for the current study due to a lack of radiocarbon dating for both articulated and disarticulated burials where these were found on the same sites (Offham, Whitehawk and Staines). Perhaps, however, this will be addressed by future absolute dating from recently discovered sites.

While articulated adults in this study are found at all types of burial location (the highest proportion being long barrows), articulated infants (aged 0-12 years) are only found at causewayed enclosures and non-monumental locations, while there are instances of articulated juveniles (13-17 years) at all locations but flint mines, suggesting age-related differential treatment between adults and the youngest in society. Thorpe (1984:47) found that children as a whole, sub-adult group were present in the Wessex assemblage but in lower numbers (n. 132) than adults (n.212); they were mostly found at causewayed enclosures, then long barrows and finally non-monumental locations. In the present study, however, immature individuals are found in the highest proportions at long barrows, followed by causewayed enclosures and non-monumental locations, and finally flint mines and oval barrows; this indicates a regional difference in burial locations utilised for children that is not apparent for adult burials which are proportionally ranked in the same order in both regional studies. Additionally, non-monumental burial locations are more frequently found in this research than in the previous Wessex study, one reason for which is that more such burials have been found in the intervening years, for example the juvenile buried at Itchen Farm, Winchester, Hampshire, excavated between 2008 and 2009.

In the south-east region a possible age cut-off could be identified whereby infants, or pre-pubescent individuals, are only deposited ‘whole’ in causewayed enclosures and in non-monumental flat graves. This may well merely reflect an absence of evidence for the burial of younger members of society at other locations although there could be a relationship with their developmental stage. Puberty in the modern day is known to begin on average at age 11 for girls and 12 for boys (National Health Service, 2018 [online]) although this is difficult to generalise due to individual variability, which ranges from 8-14 years, and is likely to have been different in prehistory anyway. It is also difficult to know how Early Neolithic society would have viewed its biologically immature members in relation to our modern concepts of childhood and adulthood. Indeed, there is ethnographic evidence of childhood being shorter and materially different whereby, for example, in some societies children are cared for by slightly older children rather than adults in some societies (Le Roy, 2015). It has been suggested that at the Windmill Hill causewayed enclosure children had roles within Early Neolithic society caring for cattle (Harris, 2011:127), evidenced by close association of child bones with cattle bones in mortuary deposits, demonstrating a specific union (Whittle *et al.*, 1999:89). At Whitehawk causewayed enclosure the burial of an adult female and neonatal infant included a partial ox radius. It could be assumed that this object, as well as the other accompanying grave goods - and the neonate itself - were deposited with the adult individual, but an alternative view would be that some or all of the artefacts were included specifically with the neonate.

The skeletal assemblage at Windmill Hill causewayed enclosure, as noted elsewhere, predominantly comprises children and sub-adults who were buried in the outer ditch circuit of the enclosure (Whittle *et al.*, 2003:160) and at Hambledon Hill causewayed enclosure the only articulated burials were of two children aged 5-12 years adjacent to each other in the outer ditch beneath flints and grave goods but separated in time by 160-250 years. The presence of craniosynotosis in the crania of these two children has been interpreted as connecting them despite their non-contemporaneity, and their burial beneath a layer of flints has been argued to represent evidence of memory and emotion (Harris, 2010). This being the case, it could be either positive or negative in origin, with the care taken either in respectful memorial or as a protective measure for either the children themselves on any onward journey to the afterlife, or as protection from them for the living. These children would have had unusually shaped crania as a result of their congenital condition, which opens up the question of how their difference to the norm would have been viewed by their society: as something to be feared or revered or as of no importance? It has been suggested that in prehistory, as today, people would have been predisposed to caring for those who were less fortunate (Roberts and Cox, 2003:59) which logically would comprise the fit, able-bodied with physical diversity from the norm as well as those with discernible physical disability, which could include the Hambledon Hill children. That they would have been accepted and cared for by their community, however, is hard to prove and it must be just as likely that people exhibiting difference were victimised, as can often be the case in the present due to fear or particular beliefs. They may also have been revered as somehow supernatural, perhaps, leading to special treatment in keeping with this, to benefit society. Significantly, perhaps, the two children at Hambledon Hill were aged between 5-12 years (spanning the 'Infant 1' and 'Infant 2' age categories in this research), the same age range as the 7-12 year old at Whitehawk buried in a hole in the second outermost ditch circuit of the causewayed enclosure.

Looking at the counties in this study that are geographically closest to Wessex, namely the Wessex Downs and northern South Downs counties of Oxfordshire, Berkshire and Hampshire (the latter providing some overlap as Thorpe's study was based on Hampshire, Dorset and Wiltshire), when these are combined, most children are found in long barrows, with causewayed enclosures and non-monumental locations both having about half as many. In East Sussex and Kent, on the Downs on the eastern side of the region there are slightly more child burials at long barrows than causewayed enclosures. When the same comparisons are applied to adults, those in the western half of south-east England are mostly found in long barrows, followed by non-monumental locations; on the eastern side of the region, however, the dominant location for adults is causewayed enclosures. In interpreting this apparent difference in burial locations between the two furthest sides of the study region it is pertinent to note that on the eastern side there are three causewayed enclosures and one long barrow containing human remains, and on the western side there are five long barrows and two causewayed enclosures. This reflects an 'east-west divide' across the study region with long barrows dominating in the west and causewayed enclosures doing so in the east. Of course, this regional difference in burial locations could have been affected by investigative priorities, particularly in the case of monumental sites, leading to excavation of some rather than others, resulting in the burial record that currently exists for analysis.

The proportion of flat grave burials (called 'non-monumental' locations in the current research) in Wessex, is minor compared to burials in long barrows and causewayed enclosures (Thorpe, 1984:48). In this study of south-east England, non-monumental burials are equally split between the east and west but most are in the North Downs/Wessex area, demonstrating a higher likelihood of individuals being buried in this way further westwards. Of these, sub-adults only appear in the western side of the region in Hampshire and Oxfordshire. Non-monumental burials can potentially result from antiquarian exploration, incidental finds, coastal erosion or excavation of later period sites and their isolation can be difficult to explain contextually (Schulting, 2009:3). Schulting highlights an apparent trend for single male non-monumental burials to be articulated compared to females and infants being at least partially disarticulated (Schulting, 2009:4). In the south-east region of this study, however, although small in number, the proportions of burials in non-monumental locations are almost equally split between the sexes and between articulated and disarticulated deposits. The remains of children in the non-monumental group are, however, only articulated. The proportions of articulated and disarticulated burials are similar overall at causewayed enclosures. Disarticulated proportions are similar for males and females at long barrows and causewayed enclosures, but only disarticulated males are found at oval/round barrows and non-monumental locations. As might be expected, most disarticulated deposits are found at long barrows followed by causewayed enclosures. The proportions at all other site types are far fewer.

It has been argued that evidence points towards long barrows and chambered tombs being places of collective and successive deposition (e.g. Thomas, 1999; Fowler, 2010) and that long barrows and oval barrows were effectively cultural archives in which human remains were one artefactual type of many, characteristic of social group identities (Russell, 2002:143-5; 2004) with certain skeletal elements given emphasis due to their spatial placement (Thomas, 1999:136). The deposition of disarticulated human bones *per se* has been widely discussed with interpretations including the distinction between bones and flesh as an expression of divisions between maleness and femaleness (Thomas, 1999:136). This interpretation could be convincingly applied to the western side of the region, where male deposits dominate, but is problematic when looking at the evidence for the eastern side where the split between the sexes is quite similar, and also the case when considering disarticulated deposits for the south-east region as a whole.

The burials at flint mines in Sussex are notable for their uniqueness. It has been noted previously that there is apparently differential treatment of males and females in this small category of Early Neolithic mortuary practice, with the male burial in Shaft VI at Cissbury being placed in a defined grave in an upper level of the mine and the two females buried in basal levels with less obvious care (Russell, 2001:108). The function of mines has been much debated with the observation that the flint extracted from below the ground would not have been the best quality in the area, leading to the suggestion that the interpretation of these as 'mines' may be too simplistic and that the shafts themselves were special places where there was a belief-based focus on life and death (Russell, 1999:94-113, 116-22; Field, 2004:160-1; Borrell *et al.*, 2015). Demographically, the original assumption that the burial in Shaft 27 (since reassessed as female, including by the author) was male due to the mining location highlights issues, previously noted above, with unintentional bias in the archaeological record (Russell, 2001:182).

In considering the issue of which burial locations typify the Early Neolithic in south-east England, it is fair to say that, as with mortuary practice as a whole at this time, there is variety and this encompasses barrows, causewayed enclosures, flint mines and non-monumental locations. Distinction between the types of burial location can, arguably, be achieved to an extent by a consideration of mortuary functionality as a primary or perhaps secondary purpose of the location and a greater understanding is likely to be achieved by examining the chronology of the burials (see Temporality, below). It also seems worth bearing in mind when considering barrows in particular that their categoric nomenclature, although created on the basis of relative chronologies (e.g. Grinsell, 1934; Ashbee, 1960; 1970), are generalisations and there are always exceptions to the rules with different combinations of structure and deposits in different places and modification over time (Field, 2011), blurring the lines between 'long' and 'oval' barrows, for instance. It has been argued that the varied styles of monuments are due to far more than burial of the dead and they would have been used by local groups to assert their claims to territory as the population increased (Shennan, 2018:200), which could further suggest that burials at these places were selected in some way for special treatment.

Temporality

The earliest burials for the Early Neolithic period in south-east England are two non-monumental ones: a child at Itchen Farm in Winchester, Hampshire, and a young female adult at Yabsley Street in London, the radiocarbon dates for which are 4230-3970 cal BC (KIA-42095) and 4230-3975 cal BC (KIA-20157), respectively. The date for the Itchen Farm burial was obtained from the human remains themselves and that for the Yabsley Street burial is a *terminus post quem* from an oak retaining plank within the grave. There are similarities between the burials in that they have both been described as being 'crouched' (under the current research they are described as 'flexed' to acute angles of 40^{o} at Itchen Farm and 70^{o} at Yabsley Street) and orientated east-to-west (although the Itchen Farm burial was on its right, facing north, and the Yabsley Street burial was on the left, facing south); furthermore, both burials contained flint knives, blades and flakes and, to a greater or lesser extent, pottery sherds (Lewis and Preston, 2012; Coles *et al.*, 2008). Despite their geographic separateness, the comparable burial positions, orientations and grave goods along with the contemporaneity of these two non-monumental burials suggests some commonality of practice. Their early dating could indicate consideration of overlap with the preceding, Late Mesolithic period. The evidence for burial practice in Britain during the Mesolithic (7000-4000 BC) has been receiving greater attention recently and is now understood to include disarticulation, manipulation and circulation of body parts (Cauwe, 2001; Gray Jones, 2011), which have been argued to represent the usual burial rite for the period. While Mesolithic burials in northern France and southern Scandinavia are focussed around cemeteries and collective tombs with bodies in a range of different positions including flexed, seated and supine (e.g. Péquart *et al.*, 1937), in Britain the limited burial record comprises mostly disarticulated burials in groups in coastal and inland caves, middens and palaeochannels. Along with two known cremations in pits and four inhumations elsewhere in Britain, in southern England Mesolithic inhumation burials have been found in the Mendips in the south-west, at Aveline's Hole, Gough's and Greylake Caves, and in the Thames Valley at Tilbury on the Thames foreshore, and a cremation in a pit was found at Langford north of the Thames in Essex (Meiklejohn *et al.*, 2011; Schulting, 2005; 2013; Cobb and Gray Jones, 2018).

When seeking similarities with the earliest Neolithic burials, there is, unfortunately, a lack of data on details such as burial positions and orientations in the record, however, there is a potential geographical correlation between the Early Neolithic burial at Yabsley Street and the Late Mesolithic burial at Tilbury, both on the River Thames foreshore, and this can be extended to include the Early Neolithic burial at Itchen Farm which is similarly located near to a river: namely the Itchen in Hampshire. There is further similarity in the associated finds of Burial A at Aveline's Hole (interpreted as a double burial of two adult males) which included animal teeth and bones, fossils and flint blades; the latter also having been deposited with both the Yabsley Street and Itchen Farm burials. Whereas single inhumations were once a rite more associated with the Bronze Age, evidence now indicates its emergence can be dated back to the Mesolithic at least and it is not unreasonable to infer that there may have been some continuity of motivation behind this practice over time. This seems most likely to be aligned to riverine and cave locations and perhaps to the inclusion of animal bones (or animal parts from which the flesh later decayed) and flint flakes as associated grave goods, although the significance of these may have been as much to do with material available at the time as with any deeper meaning, or perhaps both. However, against the case for continuity of mortuary practice it has been argued that there is a lack of cave burials from the last 2000 years of the Mesolithic from around 6000 to 4000 BC (Chamberlain, 1996). Those few burials in caves that have now been directly dated to the Late Mesolithic are from South Wales, Derbyshire and Ireland; those in south-west England - geographically closer to the study area for the current research - date to the Early or Middle Neolithic (Hellewell and Milner, 2011:63).

Additional evidence for possible continuity comes from the apparent similarities with disarticulated burial deposits in the Mesolithic. It has been argued that Late Mesolithic shell middens, which included deposits of human bone and material culture, inspired the construction of Early Neolithic monuments, both being similarly permanent features in the landscape that altered it and acted as places for people to return to and manipulate the human remains, however there is debate around whether the deposition of human remains was ritualistic (e.g. Pollard, 1996; Gray Jones, 2011) or more mundane (e.g. Meiklejohn *et al*., 2005).

As with the Early Neolithic period, in the Mesolithic there is evidence for a variety of mortuary practice rather than a single, identifiable rite and various practices based around different states of decay and access to bodies or body parts (Cobb and Gray Jones, 2018:375), indicating that complex burial practices long associated with the Early Neolithic were previously practised in the Mesolithic, suggesting the possibility of continuity of practice. Therefore, whereas the burials at Yabsley Street and Itchen Farm at first seem to be typical of Early Neolithic non-monumental burials, it could be argued that they were equally related to the preceding Late Mesolithic era. However, temporally, the evidence currently shows that the Tilbury burial dates to some two millennia earlier that the Yabsley Street and Itchen Farm burials and further directly dated mortuary finds would be needed to be found to pursue this line of enquiry further.

Using the earliest calibrated radiocarbon dates for the burials in this dataset (derived from the human remains in all cases except for North Marden and Yabsley Street), the two earliest non-monumental burials in the 43rd century BC are followed in the 40th century BC by the first burials at the Coldrum, Lambourn and Ascott-under-Wychwood long barrows along with a cranium from the River Thames at Battersea (classed as a non-monumental deposit). After this, in the 38th century BC, are the first burial deposits at the round barrows of Park Farm and Barrow Hills and the oval barrows at North Marden and Whiteleaf Hill, and then in the 37th century BC are the earliest burials at Whitehawk causewayed enclosure, non-monumental burials at Eton and Yarnton and the long barrow at Wayland's Smithy, followed by the causewayed enclosures at Offham, Cissbury, Staines, Shepperton and Chalk Hill, and the oval barrow at Mount Farm. These dates indicate a pattern whereby the first burial deposits for the different location types are, chronologically: non-monumental locations in the 43rd century BC, followed in the 40th century BC by long barrows, then in the 38th century BC by burials at round barrows and oval barrows, and, finally, in the 37th century BC by burials at causewayed enclosures and flint mines. Clearly in the case of monumental mortuary structures there will be a relationship between construction of these and the deposition of the human remains, however, for enclosures and non-monumental burial locations the chronology is more open to interpretation.

The longevity of the different burial locations in the south-east varies: non-monumental burials appear until the 34th century BC, burials at long barrows have the longest timespan, running as far as the 32nd century BC in the case of Wayland's Smithy, burials also take place at round barrows until as late as the 32nd century (oval barrows are short-lived until the 37th century BC if the North Marden anomaly is discounted), and burials at causewayed enclosures and flint mines date until the 34th century BC. These date ranges indicate varying lengths of time for burial practice taking place at different location types, with non-monumental burials having the longest range of more than a millennium, round barrows ranging across 800 years, long barrows and oval barrows spanning 600 years, and burials at causewayed enclosures taking place over around 500 years.

The burials for the south-east do not neatly fit into a geographical spread across the region from Kent. The earliest burials, dated to the 41st century cal BC, are in London and Hampshire, followed by long barrows in Kent in the east in the 40th century BC, around the same time as the first burials at long barrows in Berkshire and Oxfordshire in the west of the region. Then, in the 38th century BC, burials potentially start at round barrows in Berkshire, Oxfordshire and Buckinghamshire in the west and West Sussex in the east, and during the 37th century at causewayed enclosures in the east of the region in Kent, East and West Sussex, where the earliest flint mine burial also occurs around the same time, and also at a causewayed enclosure in Surrey, along with, in the west, a long barrow in Berkshire, an oval barrow in Oxfordshire, and non-monumental burials in the west in Buckinghamshire and Oxfordshire. Lastly, in the 36th century BC, the earliest burial deposits at a causewayed enclosure in Surrey are found and at a non-monumental site in Berkshire.

In their analysis of the spread of Neolithic activity, Whittle *et al.* (2011:177) propose that this started in the Greater Thames Estuary, perhaps resulting from small-scale population movement from the continent combined with acculturation of the indigenous population, and came to Kent and East Sussex between 4075-3975 cal BC (95% probability) and the rest of the south-east region between/within the range 3975-3835 cal BC, with Neolithic 'things and practices' spreading through Kent and East Sussex between 4050-3900 cal BC and to elsewhere in the south-east between 3900-3800 cal BC (Whittle *et al*., 2011:Figures 14.177, 14.176). The 'things and practices' the analysis was based on were cultivated cereals, animal domesticates, bowl pottery, typologically distinctive lithics, monuments, flint mines and rectangular buildings; however, burials were not included. The current research has found that the pattern of burials largely aligns with this although the earliest burials are not solely in the Thames Estuary at Yabsley Street but also include a non-monumental grave further west at Itchen Farm in Hampshire.

Recent aDNA research has found strong evidence for the introduction of agriculture by incoming continental farmers from Anatolia via north-west Europe (Brace *et al*., 2018) and it has been argued that migration from continental Europe was the main change agent during the Early Neolithic in England, with islands such as Sheppey and Thanet in Kent, where causewayed enclosures have recently been found, acting as staging posts where farming culture was introduced prior to its spread along river valleys by separate groups displaying uniform patterns of behaviour (Hammond, 2007).

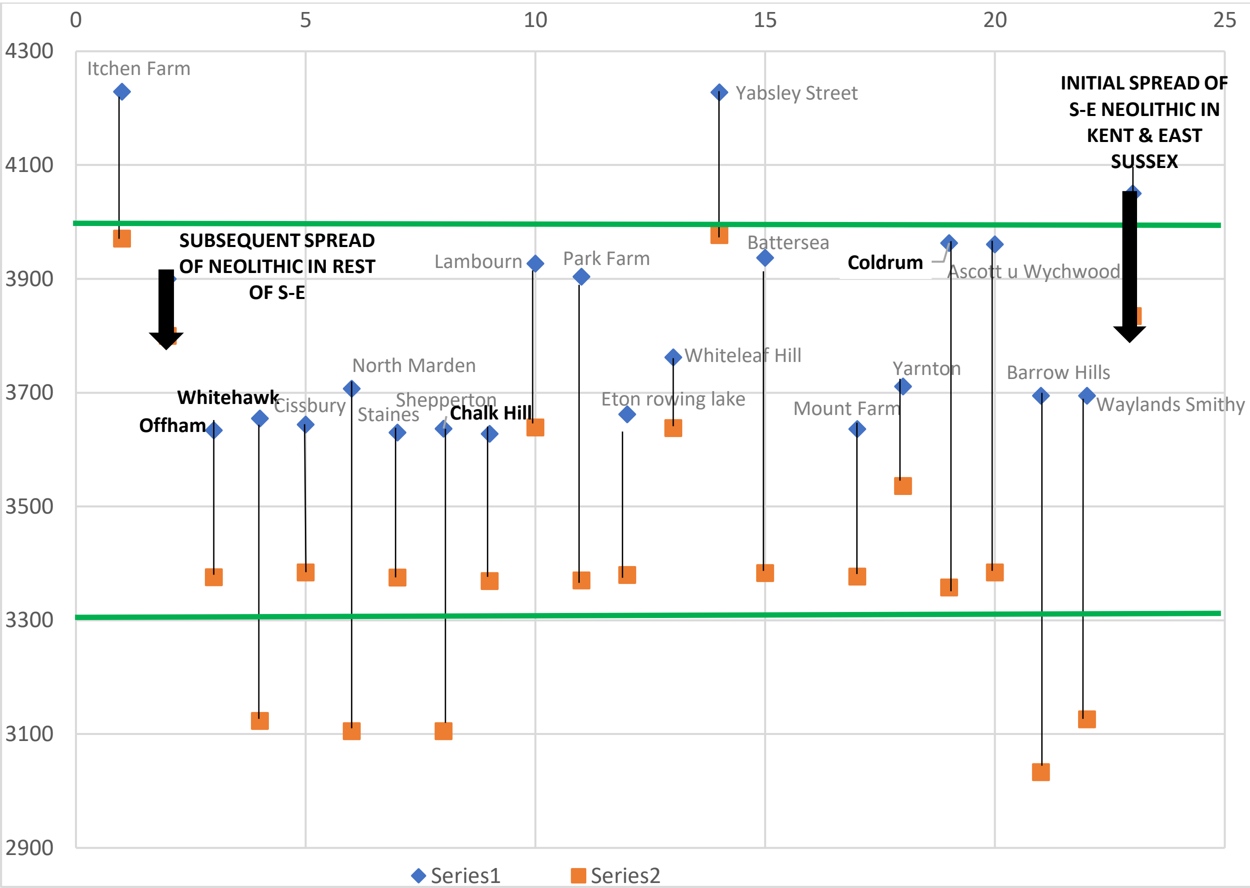


Figure 6.1: Ranges of earliest and latest calibrated radiocarbon dates for burials by site in relation to the initial spread of Whittle *et al.* (2011)'s Neolithic 'things and practices'.
Y axis = Years cal BC. Series 1 = Earliest radiocarbon date for burials on site; Series 2 = Latest radiocarbon date for burials on site; vertical lines indicate radiocarbon date ranges for sites (note: number of dated burials varies by site from one to multiple); horizontal green lines indicate Early Neolithic period as defined in this research c.4000-3300 BC. **The sites with the earliest burial dates for Kent and East Sussex are shown in bold.**

Comparison with patterns of burial chronology could provide context to this argument. Figure 6.1 (adapted from Figure 4.8), illustrates the earliest and latest calibrated radiocarbon dates for burials in relation to the initial spread of Whittle *et al*. (2011)'s Neolithic 'things and practices' and these are summarised in Appendix 3. The earliest burials in the south-east corner of Kent and East Sussex were limited to the long barrow at Coldrum - by its nature a mortuary place - and otherwise the first burials for this region came later, in the 37th century BC, at the causewayed enclosures of Whitehawk, Offham and Chalk Hill, monuments whose purposes are less clear-cut. The burials at causewayed enclosures all take place during their peak construction period of the 37th century BC, rather than during its beginning or decline in the centuries either side, suggesting that mortuary practices here were introduced or developed as the overall phenomenon of causewayed enclosures took hold and they became a prominent monumental feature in the landscape. It seems that whatever ceremonial or social behaviour was taking place at causewayed enclosures, the beginning of the use of their ditches for the deposition of human remains was temporally linked to their prime, likely symbolising integral messages about life and death.

Further detail on the chronology of the Early Neolithic burials in south-east England is given in Figures 6.2 and 6.3 which show the calibrated dates by site, grouped by type of burial location. These illustrate clearly the two early non-monumental outliers at Yabsley Street in Greater London and Itchen Farm in Hampshire. Taken as a whole, non-monumental burials cover a wide timeframe from the 43rd to the 32nd century BC. The period of burial deposits taking place at long barrows is less elongated in comparison, collectively dating to a thousand-year period between 4000 to 3000 cal BC, equating to perhaps 50 generations. The span of burial activity at causewayed enclosures is strikingly compact in comparison, largely from from the 37th until the 34th century BC, which coincides with the new date from the Shaft 27 burial at Cissbury flint mine of 4775 BP (OxA-34470) (Teather, forthcoming), which calibrates to 3640-3380 cal BC. Finally, the chronological distribution of burials at oval and round barrows is visually somewhere between that for long barrows and causewayed enclosures.

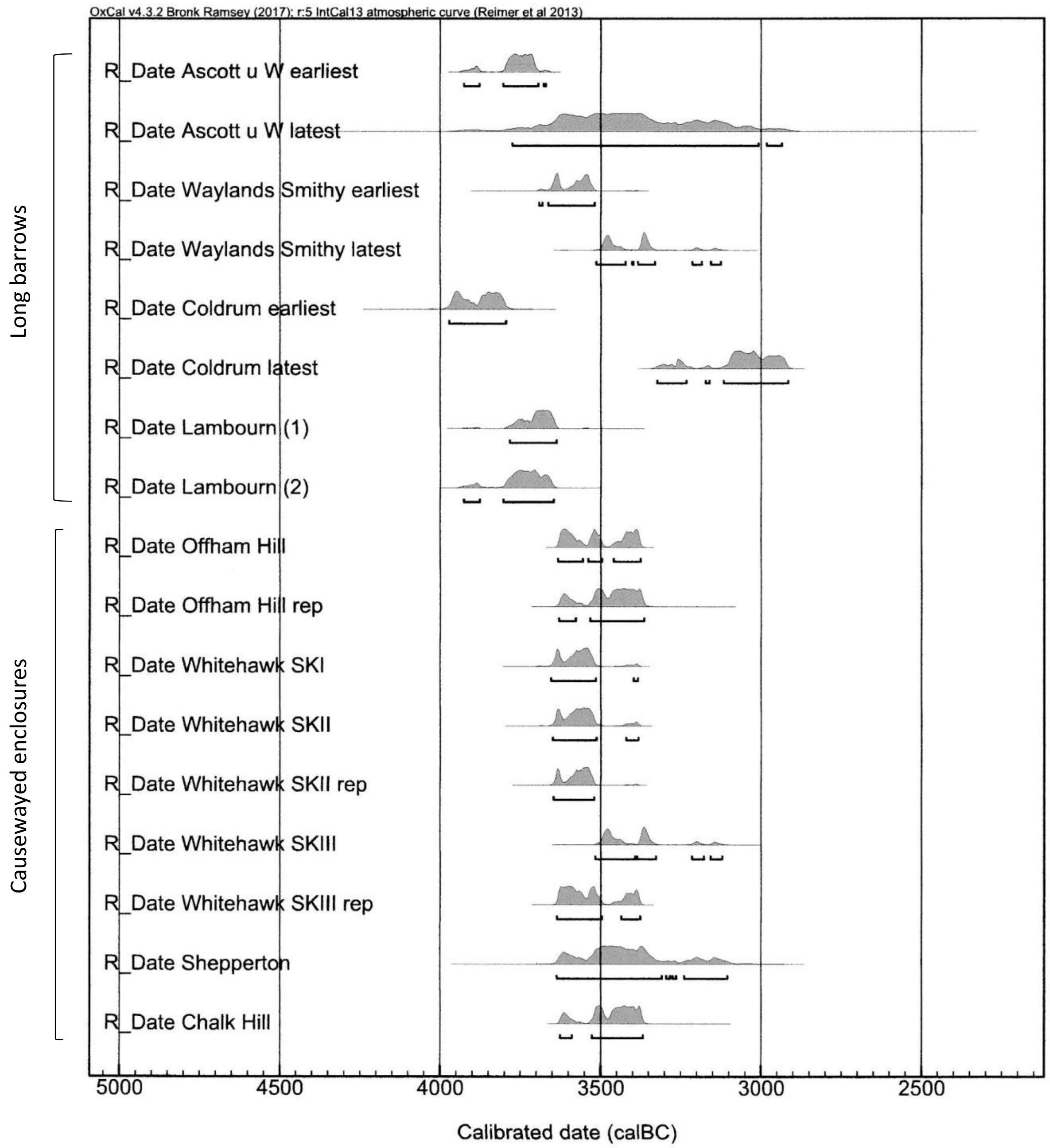


Figure 6.2: Atmospheric radiocarbon curve showing calibrated dates for burials grouped by location type: long barrows and causewayed enclosures (where more than two dates exist for one site, the earliest and latest only are used; rep = replicated dating of sample)

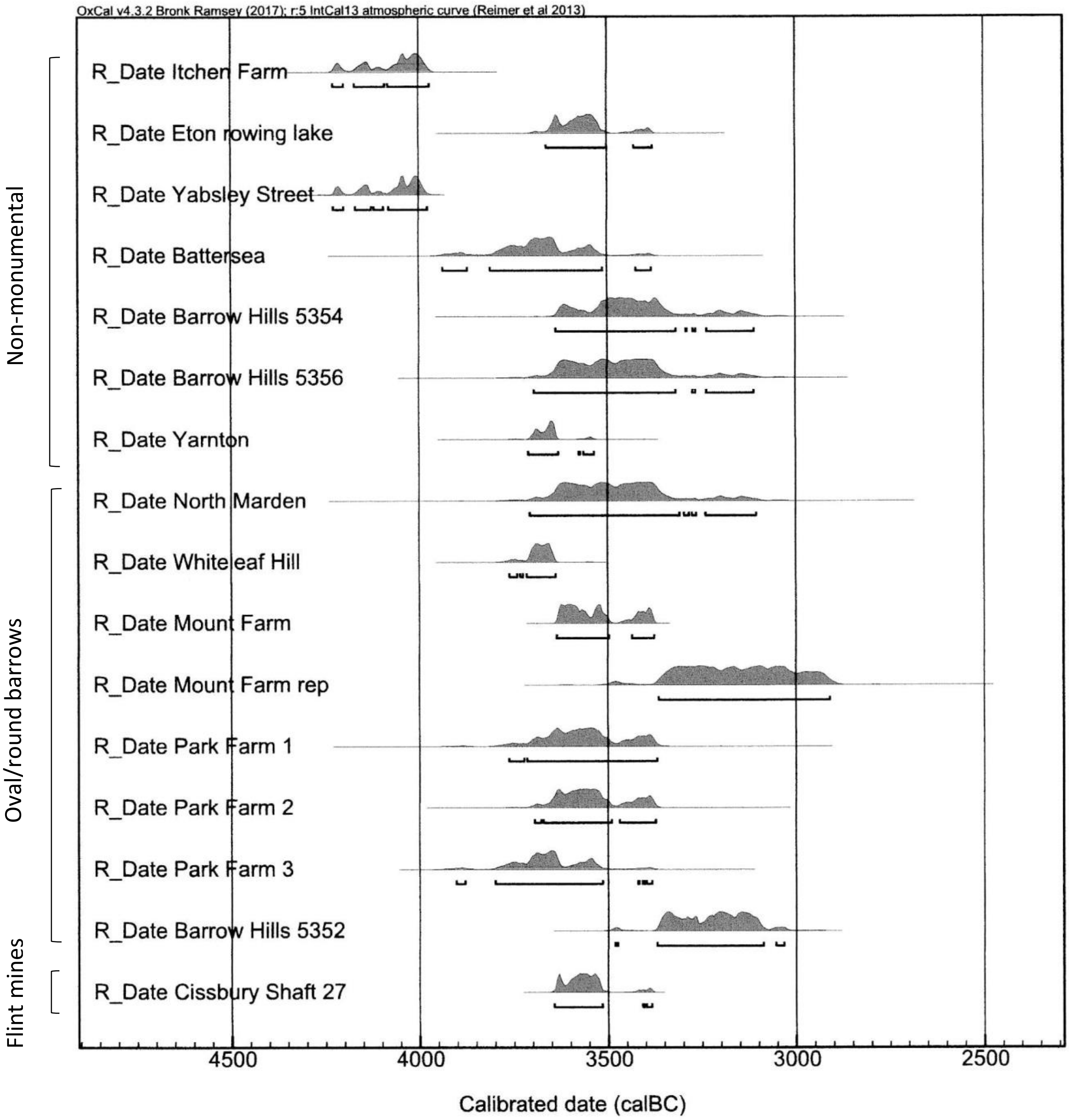


Figure 6.3: Atmospheric radiocarbon curve showing calibrated dates for burials grouped by location type: non-monumental, oval/round barrows and flint mines (rep = replicated dating of sample)

It has been argued that the Mesolithic-Neolithic transition was a process of transformation, contributed to by both indigenous people and colonising incomers, resulting in, among other things, new understandings of dealing with the dead (Cummings and Harris, 2011). Shennan (2018:205) proposes that, following an original, rapid spread of Neolithicisation by colonists in the first centuries after 4100 BC, possibly due to population pressure, the next 300 to 400 years saw a massive population increase and the introduction of burial at monuments, such as causewayed enclosures, most of which have generic predecessors in north-west Europe. However, it is not necessarily clear whether the spread of similar monuments in Britain results from ongoing interaction with continental Europe or descends from a common cultural ancestor (Shennan, 2018:198). It does seem certain, though, that burial practices were an inherent part of the huge cultural shift that was occurring during the Early Neolithic period and this probably evolved on a regional as well as cultural basis. Furthermore, it seems that while mortuary practice from the preceding Mesolithic period may have played a part in shaping that which followed in some places, this was not the case in others. In Kent, for example, there is no trace of Mesolithic activity in the vicinity of Chalk Hill or Kingsborough causewayed enclosures, arguing against indigenous innovation there (Hammond, 2007:374).

There are examples of Early Neolithic sites with burials overlying previous sites, for example the long barrow at Ascott-under-Wychwood in Oxfordshire, which is situated in the same location as a previous Mesolithic occupation site, and at Whitehawk in East Sussex it has been suggested that a long barrow existed beneath the external bank of the causewayed enclosure (RCHME, 1995; Sygrave, 2016), both of which suggest continued of use of sites that were valued in some way which, it has been argued, may indicate cultural continuity and 'co-creation' across prehistoric eras and regions (Ray and Thomas, 2018). It has been argued that at Ascott-under-Wychwood the significance of the pre-barrow setting was part of a much wider but local landscape (Whittle in Benson and Whittle, 2007:344). An earlier midden there, as at nearby Hazelton, was incorporated into the subsequent barrow itself, which may demonstrate continuation of practices when other things were changing or, alternatively, a more pragmatic continuation of use of a valued location (Benson and Whittle, 2007:347). At Whitehawk, the considerable ceramic assemblage suggests that the causewayed enclosure was occupied for lengthy periods of time, even permanently (Sygrave, 2016:62). Burials in the database for the current research have been found at the known mortuary settings of barrows, at causewayed enclosures, whose function is less certain, and at non-monumental locations including a cremation at an occupation site at Yarnton, all of which could potentially represent special places within the Early Neolithic landscape with earlier origins and, indeed, continuity into the later Neolithic, the Bronze Age and beyond.

Recent research has identified a 'boom and bust' pattern of population during the Early Neolithic resulting from waves of colonisation, which is borne out by pollen analysis, showing alternately decreases in woodland environment and increases in semi-open arboreal environment in line with the rapid increases and decreases in population (Shennan, 2018:189 and 190; Woodbridge *et al.*, 2014). Potentially, the chronology of Early Neolithic burial data could be shown to align with this pattern, but comparison with the Late Mesolithic and Middle Neolithic periods would be required to explore this further.

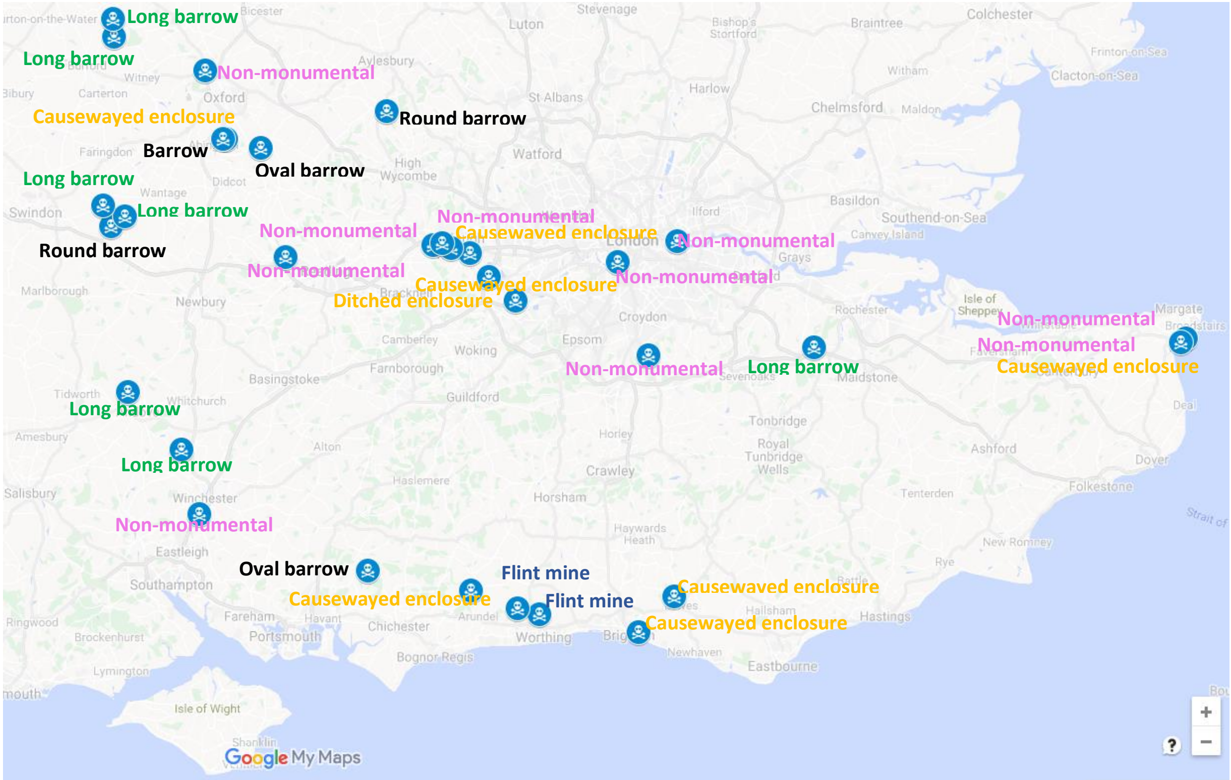


Figure 6.4: Distribution of burial location types across south-east England

Looking at the chronology of the burial locations across the region, the dates for burials on the South Downs at flint mines and causewayed enclosures all range from the 37-34th century BC, demonstrating that people – mostly adult females – were being deposited in these geographically close but structurally different locations at around the same time. On the North Downs there are early non-monumental burials, starting in the 43rd century BC with a female burial at Yabsley Street and in the 40th century BC a female cranium at Battersea, geographically close to the causewayed enclosures at Staines, Shepperton and the newly discovered monument in Berkshire, the only directly dated human remains here currently being from Shepperton in the 37th century BC, so several hundred years later. Elsewhere in the Wessex Downs, the non-monumental cremation of an adult female at Yarnton dates to the 37-36th century BC, close to the causewayed enclosure at Abingdon and the long barrows at Ascott-under-Wychwood (radiocarbon dates ranging from 3910-3520 cal BC) and Lyneham (not directly dated), indicating likely contemporaneity but clear variety of practice.

On the Wessex Downs, there is a group of round and oval barrows at Whiteleaf Hill, Barrow Hills, Mount Farm and Park Farm with Early Neolithic burials of mostly adult males but also an adult female and a juvenile with an average radiocarbon date of around 3500 BC. Nearby are the long barrows of Lambourn and Wayland's Smithy with Early Neolithic burials also equating to an average date of around 3500 BC, demonstrating at least a period of contemporaneity with the round/oval barrows although, as Figures 6.2 and 6.3 illustrate, the long barrow burials generally began to be deposited earlier. The round/oval barrow burials are, in all but one case, single inhumations and similarly the burials at the Lambourn long barrow are three single articulated burials, whereas at Wayland's Smithy long barrow there is a large, commingled burial deposit. In this area, therefore, again there is clear evidence of difference in terms of locations and practices.

There are articulated burials at both Barrow Hills and Wayland's Smithy in the Wessex Downs part of the region that span into the Middle Neolithic period of 3300-2900 BC. The current research has not recorded Middle Neolithic burials other than on sites such as these where the radiocarbon dates range across the two periods, however there is evidently continuity in some cases, such as these on the western side of the region. On the eastern side, in Kent, the inhumation of an adult male dated to 3350-3090 cal BC (SUERC-40296) has recently been discovered on a multi-period site in Thanet, with human bone deposits extending from the Middle Neolithic to the mid-Saxon period (Andrews *et al.*, 2015:29 and 325). Also in the district have been found the non-monumental burials at Nethercourt Farm (Dunning, 1966) and Monkton-Minster (Bennett *et al.*, 2008), included in the current research - both also adult males - and other probable Mid-Late Neolithic (but not directly dated) burials at Mill Lane, Margate, and Chilton Farm, Ramsgate (Fisk, 2003). There are indications of a pattern in this part of the south-east region of non-monumental articulated burials (Andrews *et al.*, 2015:231), often of adult males.

Looking at the south-east region as a whole, in light of the available radiocarbon dating, there is evidence for a variety of burial locations in use contemporaneously in the form of barrows, causewayed enclosures, non-monumental locations and flint mines, and burial rites in the form of single inhumations, commingled groups and cremation. This aligns with the argument that variety of practice was as usual in the Early Neolithic as it is in the present day (e.g. Robb, 2007). It is natural to seek generalisations but often unrealistic and, arguably, more useful to accept diversity as representative of a growing population at this transitional time in prehistory. It is important to bear in mind the limitations of the archaeological record in making any interpretation, both in terms of the evidence available being only that which has been excavated to date, and in that not all burials have been directly dated due to the issues of funding and suitable samples being available. However, based on the data that exists, this study has identified a regional picture whereby burials were predominantly of adult individuals, although children comprised a fifth of the burial population, and life expectancy was around 43 years; most burials – which could only have been a small proportion of the overall living population – took place in long barrows and causewayed enclosures, the burial places that were used overlapped but changed over time, beginning with non-monumental locations, then long barrows, round and oval barrows, followed by causewayed enclosures and flint mines. It was a time of great change and visible mortuary behaviour appears to have evolved alongside this. Having considered the overall picture in terms of time and space, the different burial practices apparent during the Early Neolithic period in south-east England are now discussed.

Disarticulated burial deposits

Thorpe (1994) looked at the contexts of deposited body parts in Early Neolithic Wessex and found that long bones and other post-cranial bones dominated in long barrow assemblages whereas skulls were more numerous in causewayed enclosures. The current study has not sought to specifically break down the disarticulated human remains into body parts, however, an informal analysis of the recorded data does indicate that on the western side of the south-east region there are skulls found at long barrows, causewayed enclosures and non-monumental locations and there is an absence of long bones at causewayed enclosures in the Wessex Downs. This south-east study area includes the large commingled assemblages at the Wayland's Smithy and Ascott-under-Wychwood long barrows which comprise numerous cranial and post-cranial body parts. On the eastern side of the region, however, skulls are most numerous at causewayed enclosures and long bones are found at both long barrows and causewayed enclosures as well as a non-monumental location. Combining the data for the south-east region as a whole, focussing on the same three location types and excluding the large commingled assemblages mentioned previously, a pattern can be observed whereby disarticulated skulls and long bones are both most numerous at causewayed enclosures (the latter being focused on the western side of the region), potentially indicating a difference for the region as a whole when compared to the findings in Wessex, however, more detailed analysis would be required to explore this further and it would be difficult to calculate this type of data accurately from records where no recent assessment has taken place or archives are missing, particularly where there are comingled assemblages.

Unsurprisingly, there are more disarticulated burial deposits in the database overall for this study than there are articulated burials, in keeping with the generally understood pattern of burial practice in the Early Neolithic. The vast majority of disarticulated human bones are the remains of adult individuals and, when those individuals for whom it was possible to estimate sex are broken down, there are more males than females by a ratio of around 3:2. This broad pattern aligns with previous studies, showing that for the Neolithic period, most burial deposits are disarticulated, with more adults than immature individuals and more male than female individuals. However, as has been highlighted previously, the quantity of mortuary evidence in the record for the Neolithic period is far below what the population is likely to have been at the time, probably by tens of thousands, suggesting that the majority burial rite (or rites) was something that is archaeologically invisible (Fowler, 2010:10). Against this background, any attempt to generalise practice can be challenging, particularly when the topic is an emotive one such as death and as apparently complex an aspect of mortuary practice as the generation and utilisation of body parts.

The distinction between disarticulation by exposure and hands-on defleshing relies on osteological evidence, namely gnawing marks and weathering to the bone for the former and cut marks, which can indicate removal of flesh akin to the butchery of animals, for the latter, all of which can be elusive due to factors such as the condition of ancient bones. The evidence from the current research is given at the end of this chapter (Table 29) and, if anything, highlights the difficulty in identifying the origin of such evidence with any certainty. Recent studies have, however, found convincing evidence of animal gnawing resulting from the exposure of human remains, for example at Boles Barrow in Wiltshire (Schulting and Wysocki, 2005) and Adelstrop long barrow in Gloucestershire (Smith, 2006). For the sites included in the current research there are records of cut marks within long barrow and causewayed enclosure assemblages which also contain cases of violent trauma. At causewayed enclosures there is gnawing to the ribs of an articulated adult female individual at Whitehawk, along with two records of probable decapitation, to an adult male at Staines and an adult female at Chalk Hill. At Hambledon Hill causewayed enclosure in Dorset, west of the region studied in the current research, skulls and other bones were found in ditch bottoms and weathering and perimortem trauma has led to an interpretation of excarnation and the preparation of human remains with adjacent long barrows being the final destination for the dead (Mercer, 1980). Seven of the 12 skulls found at Hambledon Hill were estimated to be from female individuals and five were sub-adults; it has been found that 23 individuals from the Hambledon Hill complex had cut marks which have been attributed to defleshing (McKinley, 2008:490).

Two crania recovered from the River Thames are included in the database and have been directly dated to the Early Neolithic period. Alongside these is a cranium also dated to the Early Neolithic from a palaeochannel at Eton rowing course, Buckinghamshire (where a further cranial fragment has been dated to the Late Neolithic and hence excluded from this research). All three are adult crania, two male and one female. The frontal bone of another individual, an adult male, found by a 'mudlarker' on the Thames foreshore in West London, has also been directly dated to the Early Neolithic although too recently to be included in the database for the current research (Museum of London, 2019).

There are further examples of crania deposited in rivers in Britain dated to the Early Neolithic, for example from the River Ribble in Lancashire (Turner *et al.*, 2002). There are clear difficulties in the interpretation of these, however, as only their find spots are known, although strontium isotope analysis could reveal the individuals' geographical origins where maxillary teeth are present and a sample is obtainable. This is a small sub-group of the database and likely to remain so, however, it can be observed that currently river context depositions centre around the Thames Valley rather than anywhere else in the south-east region. Further possible examples (excluded from this research due to an absence of direct dating evidence) are from Bray, Wallingford Bridge, Benham Marsh and Runnymede Bridge, all in Berkshire in the Thames Valley.

Recent studies have achieved direct dating for a number of Thames crania (Bradley and Gordon, 1988; Schulting and Bradley, 2013; Edwards *et al.*, 2010) and considered factors such as age, taphonomic history, mode of deposition and trauma. This has developed our understanding of these depositions, particularly chronologically, which is a more robust means to allocate dating than the previous reliance on cranial indices alone; a method favoured by 19th century anthropologists, which has since been discredited and superseded by absolute dating technology. However previous findings have been used pragmatically as an adjunct to recent studies where relative dating evidence is lacking (e.g. Edwards *et al.*, 2010; Schulting and Bradley, 2013). There are also records of whole Neolithic pots, flint, and stone axes having been recovered from the Thames, indicating a range of depositional practice at this time (Thomas, 1999:85). However, although it can be convincingly argued that these items, if found with frequency in watery places, may have been deliberately deposited, this is harder to prove with crania as they could well have been attached to a complete body originally and may 'simply' represent accidental or deliberate deaths.

The manipulation and reconstitution of bodies in barrows and tombs is a recurrent theme in Neolithic studies, for example Thomas (1999:151) suggested that these effectively gave importance to specific dead people from whom descent could then be claimed, and Fowler (2004; 2008) argued that tombs were the manifestation of a community as a single, yet composite body. In south-east England it has recently been suggested that two of the burials at Cissbury flint mines may be similarly reconstituted (Teather, 2016:92) although the author would argue for a more mundane interpretation (see Chapter 5). It could be argued that the practice of reconstituting bodies was restricted to collective burial locations where there were multiple skeletal remains present from which, relatively straightforwardly, the required elements could be selected when required. This could apply when elements had been lost or taken elsewhere and it was felt necessary for some reason to create a representative 'whole' person for symbolic display. It is worth pointing out, though, that selection of bones from skeletal remains - be they articulated or disarticulated - may not have involved any concern with or knowledge of the gender of the individual from whom they originated by the person appropriating them.

It could be that death was such an accepted part of everyday life in the Early Neolithic period that there was a lack of the respect and emotion that we usually demonstrate for the dead today and that those surviving in the archaeological record were not revered or feared but instead somehow utilised in support of particular beliefs or ritual acts unconnected to the identity of specific deceased individuals. We know from anthropology that bodies can be understood very differently in different geographical and cultural locations and that modern western ideas about identity, personhood and gender may have been partly or entirely different in the past (Harris, 2018:8). Fowler (2010:17) argues that the gifting or theft of body parts would have been deeply felt by those connected to the deceased and this would undoubtedly be the case for 21st century western bereaved. However, when the concept of personhood is viewed differently, as an entity that diminishes with death, then a detachment could result that imbues a more utilitarian view of the skeletal remains. Robb (2007:290) has highlighted the complexities in separating the emotional viewpoint that pervades our modern Western deathways, particularly when dealing with people we have known in life, from a more depersonalised view observable in the ethnographic record. Crucially, he cautions against over-generalisation of past mortuary practice and highlights that all societies have multiple burial treatments which can be understood better when considered together than in isolation (Robb, 2007:287). This seems particularly relatable to the Early Neolithic period in south-east England with its variety of burial practices and locations.

Returning to the issue of demography, overall there appears to be some differentiation in the use of burial locations within the south-east region and also when compared to the data for Wessex. In Thorpe's study, male presence was found to be dominant at both long barrows and causewayed enclosures. In this study, however, whereas long barrows are predominantly a male domain in the western half of the region and male burials also dominate on the eastern side for non-monumental locations, there is a more even number of burials of both sexes at causewayed enclosures and non-monumental locations nearest to Wessex on the western side, and for long barrows and causewayed enclosures in the east. It could be argued therefore that causewayed enclosures in the south-east region were more egalitarian and, if so, this could reflect the function of these sites and how activities there in life were represented in body treatment in death. It has been suggested that causewayed enclosures provided connections to ancestors and had links to long barrows, for example at Maiden Castle in Dorset (Oswald *et al.*, 2001). This seems plausible in the landscape of Berkshire and Oxfordshire where causewayed enclosures and long barrows studied in this research co-exist, however, apart from potentially in Kent, an absence of long barrows containing human remains in the east of the region makes this difficult to argue the case here other than by the use of historic accounts of burials being recovered, such as those at Long Burgh and Money Burgh near Alfriston in East Sussex (Toms, 1922), no traces of which remain and therefore have been excluded from the database. Also worthy of further consideration, however, is the proportion of non-monumental burial locations that largely – but not exclusively - contain articulated burials of adults, evenly split by sex. That these individuals have been singled out for special treatment seems certain but the motivations behind this less so; these are discussed further below and considered alongside the practice for articulated burials generally.

Articulated burials

Articulated burials are found at all categories of burial location in this study, with the greatest numbers at long barrows followed by non-monumental locations and causewayed enclosures, and then by flint mines, oval barrows and round barrows. The nature of articulated burials enables analysis of burial positions, orientations and grave goods.

<u>Burial positions</u>

As noted previously, the archaeological record for prehistoric human remains is somewhat inconsistent and variable and this research has endeavoured to work around these limitations to obtain insights from the data that is available. The record is particularly inconsistent when it comes to the historic descriptions of burial positions and an archaeothanatological approach has been utilised to scrutinise these where possible and, alongside this, to devise a system of classification encompassing previous records to enable patterns to be observed; the methodology is outlined in Chapter 3 and the results of this analysis are summarised in Chapter 4.

The original burial descriptions in the data comprised ‘crouched’, ‘contracted’, ‘flexed’ and ‘semi-prone’ and were often apparently describing similar positions, as can be discerned from the excavation plans and photographs. The reanalysis attempted to align those burials where such evidence existed by recognising that in all cases, typical of Neolithic burials, the individuals’ legs were flexed to a greater or lesser extent and by describing the degrees of flexion in each case, grouped as acute or obtuse angles. Further data was recorded on the side the body was lying or if it was on its back or sitting. This study has synthesised the data for those individuals where it exists, which is a best-case scenario for this type of imperfect dataset.

Archaeothanatological theory, developed in recent years (e.g. Duday, 2006), primarily focusses on the analysis of burials at the point of excavation, however, this case study utilises the value of applying the principles of archaeothanatology to existing records, as has been demonstrated in other recent research, for example by Torv (2015). This has the dual benefit of reassessing previous assumptions regarding original burial positions that may not have taken into account taphonomic processes and providing a means of aligning and analysing a corpus of data which would otherwise not be possible due to its inconsistencies.

The reconsideration of the recorded burial positions for this dataset has resulted in some different conclusions being reached to the original interpretations. In some cases, these differences have been highlighted by the synthesis of the terminology, in others they result from the archaeothanatological analysis; in some cases both. It is common practice in archaeological excavation to use familiarly accepted terminology without necessarily questioning its appropriateness, particularly in the case of ‘crouched’ which has long been used to generally describe skeletons found lying on their sides with their legs bent and is ubiquitous in reports on Neolithic and Bronze Age inhumations.

Duday (2006), has highlighted the French archaeological use of the term ‘accroupie’, meaning crouched in a squatting position as opposed to lying on the side with the legs flexed, and Knusel (2014) has argued for a standardised lexicon for recording in English, based on recognised anatomical terminology, at the point of excavation. Previously Sprague (2005), for example, presented in a field guide a highly detailed recording system that, arguably, would be difficult to implement in practice due to its precision and, although it briefly mentions the difference between deposition and the position of the body at the point of excavation, it does not go in detail about the effects of decomposition on the eventual position when excavated. Thus, the 22 possible different burial positions Sprague presents in diagrammatic form, such as ‘flexed burial on side, hands to face, head straight’ and ‘flexed burial on back, hands to shoulders, head straight’, represent the position at the point of excavation to be identified for the record and do not appear to take into account an archaeothanatological approach to the identification of the position when originally interred or any change to this in the intervening years. He does, however, recognise the need for standardisation, as does Ubelaker (1994) in a previous detailed discussion of skeletal recovery and it seems the advent of archaeothanatology is the natural progression from this.

In addition to this recognition that more care needs to be taken in terms of the interpretation of burial positions during excavation, it seems equally pertinent to seek methodologies for researchers to test existing interpretations in the archaeological record to challenge assumptions and hence generalisations about the intentions of those carrying out burials in the past. Although in practice this is more difficult to apply to archival research than doing so at the point of excavation, it is possible to carry out analysis with the aid of visual and written records. Archaeothanatological studies have been conducted recently, providing opportunities to test its methodology against the original interpretations in the archaeological record, for example the work of Crevecoueur *et al.* (2015) on Minoan cemetery populations and ongoing PhD research into Anglo-Saxon burials by Emma Green (University of Sheffield, forthcoming PhD thesis).

Finding patterns in as disparate a dataset as the 22 burials from south-east England in this archaeothanatological study is challenging due to the range of burial locations and grave types, however, archaeothanatological methods can be used to make interpretations about the type of burial space that formed the original grave, whether it was filled or unfilled at the outset and, to an extent, whether the corpse was perhaps shrouded or clothed; all factors which can affect or explain original body position. From this, further interpretation can be made concerning the movement of the body over time and hence any differences between the original burial position and that uncovered at the point of excavation. This research has found that most articulated burials in the archaeological record for Early Neolithic south-east England had an acute angle of flexion (0-90^{o}) between the femorae and the spinal column, a significant proportion were flexed tightly up to 45^{o} and a small number were more loosely flexed to an obtuse angle (more than 90^{o}). Since all of the burials in this case study have flexed lower limbs to a greater or lesser extent, it seems reasonable to describe the default position for articulated burials during the Early Neolithic in south-east England as ‘flexed’. Recording the angles of flexion enables identification of any possible cases of tight binding or other such restriction that could be indicative of deviant burial practice or consideration of possible mummification, for example. The approach described aligns with elements of those of Brothwell (1981:2) and Knüsel (2014), while keeping interpretation as straightforward as possible, which seems pertinent given the restrictions of archival as opposed to field research.

This archaeothanatological analysis has identified several potential elements of burial practice that would not easily survive in the archaeological record but nonetheless may have been present at the time of the burials. Firstly, at Nutbane long barrow, for example, it is possible that Skeleton 1 was interred in the mortuary enclosure with a support beneath the skull which subsequently decayed, causing the cranium and mandible to fall. Other possible cases of organic material having left no archaeological trace are those where the corpses are judged to have been originally clothed, bound, shrouded or covered, all of which could have led to the tightly flexed burial positions observable in several cases. The maintenance of labile joint articulations or disarticulation of others can be affected by these factors in conjunction with the timing of infilling of the burial space, for example the acetabulofemoral joint can disarticulate if there is no supporting fill around it, as can be the case when shrouding prevents this from happening.

Mummification is not currently known to be widespread during the Neolithic although has recently become more widely understood as a mortuary rite during the Bronze Age as a result of newly developed diagnostic techniques (Parker Pearson, 2005; Booth *et al.*: 2015). The earliest known case of mummification is a Late Neolithic young adult male individual from Wor Barrow long barrow in Dorset (Allen *et al.*, 2016) and it seems possible that in time, as techniques develop and research expands, earlier examples may come to light. Previously, instances of 'trussed' skeletons have been recorded, as noted by Allen *et al.* (2016), such as a teenager from the Bronze Age barrow cemetery at Tallington in Lincolnshire (Simpson, 1976), buried within a wooden coffin – therefore a presumed original void - which is described in the skeletal report as follows:

> 'It lay with its head towards the south-east, half on its back and half on its left side, the knees drawn tightly in towards the chest. It must have been trussed in this position before rigor mortis set in and perhaps placed in the coffin shortly after. The skull was tilted round so that it faced backwards.' (Simpson, 1976:223)

A photograph of the burial *in situ* is shown at Figure 6.5 which shows a similar position to several within the current research, for example those from the Nutbane (Figure 5.3), Park Farm (Figures 5.12 and 5.13) and Wayland's Smithy (Figure 5.5) barrows. The angle of flexion between the spinal column and the femorae for the Tallington individual can be estimated at around 30-40^{o} and, of the twenty-two burials in the current case study, there are eight with an estimated angle of flexion of 40^{o} or less, including those listed above, which are predominantly male individuals with one female and two juveniles. None of these eight are, apparently, described as 'trussed', suggesting that at Tallington this description is interpretative based on the tightly flexed posture within a known burial void. The backward facing skull could be described as suggestive of post-mortem manipulation, although it seems at least as likely that there may be an archaeothanatological explanation connected to the original placement of the skull in relation to the pottery vessel interred with this individual. This aside, the burial position and evidence of burial in a void may well be relevant to the similarly flexed burials in this case study and, interestingly, prior to this data coming to the author's attention, the articulated burials at Nutbane, Park Farm and Wayland's Smithy had all been assessed by the author as being tightly flexed within an original burial void, perhaps shrouded, bound or covered. As mentioned earlier, the methodology recently devised for identifying mummification in prehistoric burials uses microscopic analysis of bone histology and selects potential cases that exhibit a tightly flexed posture, along with a significantly earlier date of death than deposition and pre-depositional modification of bones (Parker Pearson *et al*., 2005; Booth *et al.*, 2015). Therefore, further data would be required in order to argue for such a mortuary rite in the case study examples. In southern England, Bronze Age mummified individuals have been identified at Canada Farm, a Middle Bronze Age ring ditch at Down Farm in Dorset, at South Dumpton Down, an Early-to-Middle Bronze Age round barrow at Broadstairs in Kent, and at Neat's Court, an Early Bronze Age round barrow at Queensborough on the Isle of Thanet, also in Kent (Booth *et al.*, 2015). It could be argued that there is a case for considering the geographical distribution of these known cases opposite possible examples from the Neolithic. It has been suggested that the proportion of disarticulated bones exhibiting diagenetic signatures of prior mummification and instances of deliberate reconstitution of body parts indicate a significant proportion of Bronze Age mummified bodies may be composites. Should further, similar evidence become apparent for the Neolithic, there could be an argument for continuity of practice.

Figure 6.5: Tallington primary inhumation burial (Simpson, 1976:plate 24)

Mummified Bronze Age bodies at Cladh Hallan in South Uist, Scotland which were highly flexed with leg flexion at the hip of less than 45^{o} have been interpreted as wrapped, although it is stressed that evidence for tight wrapping *per se* does not prove mummification, although prior mummification may explain positions unnaturally possible for a fresh corpse (Parker Pearson *et al.*, 2005). Figure 6.6 shows the mummified adult female from Cladh Hallan, described (as others there also) as 'tightly flexed, reminiscent of South American 'mummy bundles', knees close to chest, femur and lower leg bones aligned in almost parallel positions, modified after death (Parker Pearson *et al.*, 2005:63). The burial position is visibly very similar to three individuals in the current research: Wayland's Smithy 1 (Figure 5.5), Park Farm Burial 1 (Figure 5.12) and Nutbane Skeleton 2 (Figure 5.3), assessed in the current research to have flexion from the spine to the femorae of 20°, 30° and 30°, respectively; the Cladh Hallan female would be judged as having a similar degree of flexion in this research and is recorded as being less than 45° by Booth *et al.* (2015). The Cladh Hallan female had had her two upper lateral incisor teeth extracted, which was interpreted as post-mortem modification due to the absence of evidence of trauma and the placement of the teeth in her hands, correctly sided (Parker Pearson *et al.*, 2005) and, interestingly, Skeleton 1, alongside Skeleton 2 at Nutbane, has been interpreted as having had his upper medial incisors deliberately extracted ante-mortem (see under Pathology and Trauma below and Figure 6.11). The mummified adult male at Cladh Hallan had been modified in an entirely different fashion, however, being a composite comprising the body parts of three individuals: the cranium and cervical vertebrae of one, the post-cranial skeleton of another, and the mandible of a third.

Figure 6.6: Mummified female burial at Cladh Hallan (Parker Pearson *et al.*, 2005:535,figure 6)

Following on from the consideration of burial spaces and binding or shrouding of corpses, also identified during the archaeothanatological analysis is the possibility of various organic materials being used for coverage of potentially various types. This could feasibly range from birch bark covers, such as for a burial at Tamula in Estonia (Torv, 2015) which, it has been argued, may have been reopened at some point, to animal hide/leather or fabric clothing or shrouding. Furthermore, it could be the case that the chalk blocks surrounding the burial of Whitehawk Skeleton II and the neonate were to hold down a covering of animal hides, for example, representing a more pragmatic than symbolic practice or perhaps a combination of the two. Another possible line of enquiry, though not evident in the data for the current research, is that of 'head and hooves' burials, identified throughout northern Europe in the Early Bronze Age, although seemingly confined to Wessex in Britain (Piggott, 1962; Ashbee, 1984; Robertson-Mackay, 1980).

Five skeletons in the case study (Nutbane I, Nutbane 2, Staines 7581, Monkton Minster 2079, and Mount Farm F602) were originally interpreted as being laid on their sides whereas this reassessment suggests a possible original burial position on their backs due to the position of the ribs and pelvis. In all of these cases except one, the skeletons' legs are flexed to the left and their heads are also facing leftwards. The exception is the individual from Monkton Minster whose legs are flexed to the right and whose head is facing right. So, all five of the individuals apparently buried on their backs were facing in the same direction as their legs were flexed towards, confirming the likely original position, and in all but one case this was to the left. Four of the five individuals were adult males, with the Staines individual being an adult female. There was variation in flexion/extension of the arms and the degree of flexion of the legs. The current research suggests that the burials in the mortuary enclosure at Nutbane were placed, possibly shrouded, in an original void which gradually infilled, and the Staines burial is felt to have also been placed in an original void but may have been clothed or bound. The Monkton Minster skeleton was likely also placed in an original void – in this case much bigger than the corpse itself - that was filled over time; the burial space at Mount Farm was inconclusive.

The articulated skeleton of a mature male individual from Lanhill long barrow was found to be lying on its back with legs flexed tightly into the body, the knees very close to the skull (Keiller and Piggott, 1938). This was interpreted by the excavators, following an exercise in experimental archaeology, as resulting from the contortions necessary to manoeuvre the corpse into the confines of the burial chamber. The four individuals in this study apparently on their backs are from locations ranging from the long barrow at Nutbane, the causewayed enclosure at Staines, a non-monumental location at Monkton Minster, to an oval barrow at Mount Farm, representing almost the whole scope of burial locations in this Early Neolithic study, which argues against a location-specific mortuary rite.

In these cases, the skeletons were originally described as being laid on their sides based on the position of their legs, however, the position of their pelvises and spine, considered in conjunction with the positions of their long bones and ribs, suggest that they may have been lying on their backs. The recent reassessment of the burials at Wor Barrow (Allen *et al.*, 2016), has similarly found that burials 1 and 2 there, both recorded originally as lying 'on the right side with the heads to the southward' (Pitt Rivers, 1898:66) were also in fact laid on their backs with their legs tightly flexed on the right, as shown in the photographs and plans to which the authors have applied archaeothanatological techniques. However, it has been concluded there that the legs of these skeletons were manipulated later, at some point post-mortem. Two possible alternative explanations for the individuals in the current study are that they were deposited on their sides but their torsos fell backwards after *rigor mortis* had subsequently relaxed, as it is known to do after several days, or that they too were subject to post-mortem manipulation. On the face of it, the plan of the burial at Staines has similarities to the one at Wor Barrow in terms of disarticulated joints and could represent post-mortem manipulation, whereas the others have sufficient intact articulations to suggest that they are in their original, primary burial position.

Alongside the five individuals in this study judged to be lying on their backs, there are four skeletons whose original position could conceivably have been seated (the juvenile Park Farm 1, adult female Park Farm 2, and adult males Waylands Smithy 1 and 2), and it is possible there is a relationship between these two positions of seated to lying on the back, possibly resulting from post-depositional movement. Seated burials are unusual in the British archaeological record although at West Kennet long barrow a juvenile individual in the south-east angle of the burial chamber, to the left of the entrance, was described as being in a sitting posture with flexed legs (Thurnam, 1860) and, in the eastern chamber of Belas Knap long barrow, 12 skeletons were reported by the excavator as being in a 'squatting' position (Winterbotham, 1866:279), while a pair of individuals in Le Déhus chambered tomb in Guernsey were described and illustrated as being seated, opposite each other (Kendrick, 1928). In his study of the prehistoric chamber tombs of England and Wales, Daniel (1958:104) identified the three burial positions used in early written sources as 'crouched' (body contracted with knees up to the chin, lying on right or left side), 'sitting' and 'squatting' or 'kneeling' and gives an example of one or the other of the latter two as an articulated skeleton found at Uley long barrow in Gloucestershire.

Seated burials are documented in northern Europe during the Mesolithic period, which could be indicative of continuation of practice. These have been found in 16 countries, with notable concentrations in central Germany (Grünberg *et al.*, 2016) and southern Sweden (Sjögren and Ahlström, 2016). Most of the Mesolithic examples have been from open-air sites, with some from caves and rock shelters, comprising 56 sites in all, and cover all demographic groups (Grünberg *et al.*, 2016:291). These seated burials were often associated with multiple grave goods and red ochre staining. Interestingly, it was found in the burial assemblage for the German sites that expectant mothers and possibly those that gave birth to boys may have been treated differently to other women, especially older ones, in the quantity of grave goods and of red ochre (Grünberg *et al.*, 2016:325).

Figure 6.7: Burial D, in sitting position, at Téviec, Morbihan, Brittany (photograph: archives of the *Carnac Museum of Prehistory*)

Mesolithic seated burials have also been found in northern France, for example at Teviec in Morbihan where a small mortuary group, comprising three females and an infant aged one or two years, have been interpreted alongside other single burials in various bending or sitting positions as ‘isolating graves’ that separated out their occupants, perhaps due to their social group (Bosset and Valentin, 2010:209).

In France seated burials are often in clearly defined burial pits that structurally retain the corpse in the seated position. There are many examples of Bronze Age ‘seated dead’ in northern France (Rottier, 2016) whereby individuals’ vertebral columns are in a vertical position, within often rigid containers, in small pits of less than a metre in diameter. Further afield, a recent study Ortiz *et al.* (2013) found that three seated burials at the Pre-Pottery Neolithic site of Tell Halula in Syria were probably all deposited similarly in a seated position, likely in containers, within pits. However, when excavated they were found to be in different states of articulation and disarticulation which the authors argue results from variation in the types and sizes of containers used, the amount of space therein and the presence of objects within them, all of which factors contributed to the different appearances of the skeletons upon excavation. This seems a particularly pertinent study in relation to the non-uniformity of burial practice evident in the Early Neolithic of south-east England and is a cautionary example of the effects of multiple factors over time on the eventual position of a corpse upon excavation.

It could be argued that possibly seated individuals were bound or shrouded prior to *rigor mortis* setting in at three-to-six hours post-mortem, which generally lasts for two-to-four days, or more in colder temperatures (Varetto and Curto, 2005), prior to the 'bloat' stage of decomposition which, along with the subsequent liquefaction, results in movement and potentially slumping to one side or the other. At this stage of decomposition there is sufficient skin and cartilage present to maintain the labile joint articulations in this changed position. Alternatively, there may have been no original intention or importance attached to a seated position and these individuals may have been shrouded or bound and laid on their sides from the outset, perhaps even during *rigor mortis* (when manipulation of the body is still possible) or afterwards prior to bloating/liquefaction. The Park Farm burials were originally recorded as 'crouched' (Richards 1990:23), this terminology most likely resulting from common excavation parlance for a skeleton lying on its side with flexed limbs although, as noted earlier, it would accurately describe an individual buried in a squatting position. The position of the feet of Burial 1 (Figure 5.12) in particular indicates such a position, being articulated and tightly tucked beneath the pelvis.

The photographs of adult male individual WS1 (Figure 5.5) at Waylands Smithy are particularly suggestive of an original seated position and subsequent slump soon after deposition, perhaps wearing tight clothing or shrouding which retained the labile articulations such as the distal joints of the feet. The case for WS2 (Figure 5.5) is less clear cut, as it is situated on top of a pile of comminged human remains although it is suggestive of an original seated position and subsequent fall to the side, similar to that of WS1. WS1 was placed on the floor of the mortuary structure, separately to the north of the main mass of mortuary deposits without other remains above or below. The individual has a vertical spinal column, which is possibly also the case with WS2. The excavation reports and reassessment (Whittle, 1991; Wysocki *et al.*, 2007) include discussion about disarticulation of the human remains and the location and significance of the articulated WS1 individual, but no mention of the burial positions of these individuals.

One of the individuals (B2) from the commingled human remains at Ascott-under Wychwood long barrow, recently reassessed, is described as 'either supine or even possibly in a seated position' with the lower limbs flexed (Whittle *et al.*, 2007:154). In this case the skeletal remains of the lower limb, foot and pelvis are described as exhibiting the highest degree of anatomical consistency. The individual had an embedded arrowhead tip in the right side of the 3rd lumbar vertebra and this has been interpreted as the likely cause of death by haemorrhaging. It is argued that the rest of arrowhead, which was absent from the barrow, was removed after impact (Whittle *et al.*, 2007:220).

The possible seated burials in this research are all at barrows, one being part of a small group of similarly interred individuals and one within a large commingled assemblage; they are male, female and juvenile. Those apparently on their backs with flexed legs are mainly male, with one female, and are variously from a causewayed enclosure, an oval barrow and a non-monumental location. It is probable that these burials were bound in some way and it could be suggested that they were in fact alive when deposited, perhaps intoxicated, and either left to die surrounded by the remains of others or deliberately killed in some way at a later point.

There are three burials in the database recorded as ‘semi-prone’, two of which were found at Whitehawk causewayed enclosure, excavated in the first half of the twentieth century, and a further one from the newly discovered Early Neolithic monument in Berkshire (McKinley, 2018). These burial positions are discussed in detail in Chapter 5. Both the Whitehawk burials are described fully in the excavation report although detailed plans have not been located during the current research to supplement these, however there is an *in situ* photograph of young adult female Skeleton II, buried with a neonate. Figure 5.16 shows a reconstruction of Skeleton I which was once on display in Brighton Museum. Comparison with the original description highlights the problems with accuracy in such reconstructions, which are not necessarily an issue for museum displays but unhelpful for archaeothanatological studies!

It seems likely that the presence of the neonate is crucial to the analysis of the burial of Skeleton II. From the description it appears that the infant either died *in utero* or shortly after birth and placed in the space between the adult female’s left elbow and knees post-mortem, orientated in the same way. If the adult female died either while pregnant or during childbirth and was buried shortly after, it could be that during decomposition, the release of abdominal fluids led to slippage of the upper body resulting in the apparent ‘semi-prone’ position at the point of excavation from an original position flexed on the side.

The ‘semi-prone’ burial close to the base of a ditch segment at the new Berkshire monument is described by the excavator as being flexed and predominantly prone but resting on the right side with the left arm partly behind the back and having been manipulated in that the cranium and left femur had been removed. It is stressed that the skeletal remains were probably not in their original location or position and it is noted that there was no evidence of canid activity and no observable grave cut (McKinley, 2018).

Overall, it seems that 'semi-prone' is a description which could be applied when looking closely at burials that were likely originally flexed on their side, or perhaps thrown unceremoniously into ditches, or manipulated post-mortem. In many cases these may well have been described in the past as flexed, contracted or crouched. Alternatively, though, there may have been some burials observed as being distinct from other flexed burials when excavated and recorded as such, the individual at the newly discovered Early Neolithic monument in Berkshire being a possible case in point, particularly given the expertise of the osteologist involved. Other than the three individuals described, no other burials within this study have been recorded as 'semi-prone'. It does not seem that the term 'semi-prone' deserves its own burial position category to reflect a conscious desire to achieve this placement; rather, it seems more likely to result from taphonomic processes or lack of care upon deposition and can perhaps be best described as 'flexed' with additional detail to elaborate on this interpretation.

Deviant burial

The description of a burial as 'prone' – even 'semi-prone' - has connotations of deviancy from the norm. Where a usual burial rite is known, deviant burials can be fairly straightforward to identify, however, burials in the Early Neolithic demonstrate much diversity, making it harder to extrapolate burial practice that could potentially indicate deviancy, unless it is the act of burial itself which is deviant. Burial face down is both ancient and global in practice. It has been found that both sexes and all age groups have been buried in prone positions, although the majority are adult males. Prone burials are often isolated cases and they have been most commonly found from the Roman period to the end of the Viking age (AD43-1000) in Europe (Arcini, 2009:231). Early Neolithic examples would therefore be unusual. Methodologies have been devised to identify difference in burial practice (e.g. Shay, 1985; Tsaliki, 2008), however, it is stressed that these generalised criteria are basic and in practice deviant burial would vary in different societies, may not reflect status in life and instead may result from certain actions or the circumstances of death, and that in simple societies volitional and non-volitional behaviour would be treated equally in death (Aspock, 2008:25).

It could be informative to consider whether burials in this research may have a potential deviant element when aligned with the identified basic indicators of normative burial practice in Early Neolithic south-east England. A summary of evidence from this case study sample is given in Table 27, aligned with Shay's (1985) and Tsaliki's (2008) methodologies.

As indicated above, the lack of uniformity in Neolithic burials is, to an extent, prohibitive, however, even on an individual site basis there can arguably be evidence of possible deviancy in burial practice. There are examples of potentially unusual practice in nearly all the identified categories with the exception of 'unusual places' (due to the inherent variety in this respect) and rivets/stakes (due to their absence). If the 'normal' burial position for the Early Neolithic is on the side with flexed lower limbs, it could be argued that the possible instances of seated and semi-prone burials discussed above and even those apparently on their backs are deviant from the norm.

after Shay, 1985	**Sites**	**Possible evidence**
Tied body parts	Nutbane	Body positions/joint articulations
Prone	Whitehawk	Skeletons I & II 'semi-prone'
Unusually deep	-	-
Covered [or surrounded] by rocks, weights	Cissbury Nethercourt Farm Itchen Farm Park Farm Whitehawk	Chalk blocks around Shaft VI burial Covered with layer crushed pottery Sarsen stone at feet Buried beneath sarsen stones Chalk blocks around Skeleton II/IIa
Cremations in inhumation site	Staines ?Blackpatch Ascott-under- Wychwood, Yarnton	Cremation Cremation Cremation Cremation
Decapitation	Staines	Cranium in ditch
Rivets/stakes	-	-
after Tsaliki, 2008		
Unusual places	**-**	**-**
Unusual positions	Whitehawk Park Farm Nutbane Wayland's Smithy	'Semi-prone' ?Seated ?Seated ?Seated
Mass burials	Wayland's Smithy Ascott-under- Wychwood Coldrum Barton Stacey	)) Commingled deposits))
Inhumations/cremations with ritual evidence	Staines Barrow Hills Whitehawk Cissbury	Decapitation Pig mandible on chest Chalk artefacts, fossils, etc Chalk artefacts
Cremations in inhumation site	(see above)	(see above)
Crime, e.g. infanticide, sacrifice, cannibalism	Whitehawk	?Cannibalism ?Infanticide

Table 27: Summary of possible evidence in database for necrophobia/deviant burial practice

There are examples of burials with evidence of trauma, such as at Staines causewayed enclosure which includes a probable case of decapitation in an adult male from the disarticulated assemblage, and at Whitehawk causewayed enclosure the adult female buried with a neonate has possible perimortem trauma to the right parietal bone. Also at Whitehawk is evidence of possible perimortem trauma in the disarticulated assemblage to adult individuals (Ponce, 2015).

As noted in Chapter 5, the young adult female buried in Shaft 27 at Cissbury flint mines exhibits likely post-mortem cranial damage, probably resulting from the pressure of material resting on top of the cranium (Tucker, 2018, based on observation of photographs), suggesting her death was caused by something other than a mining collapse, and she was buried with four pieces of incised chalk, described as 'chalk charms' due to their high degree of decoration (Varndell, 1991:100-103; Teather, 2016:72). The use of the term 'charm' suggests an ornamental function, perhaps with magical properties, and this could lead to interpretations of the objects as symbolic in either a comforting or protective way, perhaps to retain the deceased's links with the living world, or to accompany her on her onward journey to the afterlife, or alternatively to protect the living from a malevolent force. A mature male individual at Barrow Hills in Oxfordshire was buried with a pig's mandible on his chest and, again, this could be open to interpretation as to whether it memorialised something from life or symbolised a belief pertaining to death.

Cremations are rare in the Neolithic but there are instances in south-east England: an adult female at Staines causewayed enclosure, an adult and juvenile at Blackpatch flint mines, an adult male at Ascott-under-Wychwood and an adult female at the non-monumental site at Yarnton. The cremation at Yarnton was buried in the top of a pit just outside the east wall of a Neolithic rectangular house, therefore an unusual location in the context of this study. It was interpreted by the excavator as evoking creation and belonging which would later enhance the significance of that place (Hey *et al.*, 2016:89). Further cremated human bone was found in postholes elsewhere at Yarnton and later examples on the same site date to the Middle and Late Neolithic and into the Bronze Age. In the context of the burial data in this study overall, cremations provide arguably the clearest deviation from usual practice and perhaps there was power related to these unusual examples of body treatment or, as has been suggested previously, an emerging focus on 'social death' and memorialisation (Thomas, 1999:227). It should be borne in mind, however, that the absence of cremations in the burial record for the Early Neolithic may be due to archaeological invisibility rather than it being little practised at this time (Smith and Brickley, 2009:59).

Interestingly, Shay (1985) includes burials covered by rocks or weights in the criteria for deviant burial practice, which can be interpreted as a necrophobic method of containment. In the south-east data there are several burials which could fit within this category, for example the adult female burials in Shafts H and 27 at Cissbury could be interpreted as the ultimate burials covered by rocks, beneath and contained within the chalk and flint itself. The other articulated burial from Shaft VI at

Cissbury, an adult male, was surrounded by chalk blocks, as was the adult female Skeleton II and neonate at Whitehawk, perhaps indicating an equally differential burial, as has been noted before, interpreted as a burial rite applied to victims of deliberate killing (Teather, 2016:58). A further example of the covering of an articulated burial is the adult male at Nethercourt Farm, covered not by rocks but by a layer of crushed, human-made pottery. The theme of burials covered by rocks could also be extended to the adult female, adult male and juvenile at Park Farm barrow, buried beneath sarsen stones, and perhaps also to the child in the non-monumental grave at Itchen Farm with a sarsen stone at its feet.

Shay (1985) also suggests, quite plausibly, tied body parts as being indicative of deviant burial practice. This is obviously difficult to identify in the absence of the bindings themselves, but inferences can be made from the burial positions, as suggested above, such as in the case of tightly flexed burials in apparent squatting or seated positions at Nutbane or Wayland's Smithy long barrows.

Overall there are a number of burials in this database that could be potential indicators of deviant treatment. It does seem that some indicators have relevance in this dataset and would warrant further investigation on a wider scale. In this data there are no clear demographic patterns (age or sex) to the differential treatment but a larger sample over a wider area could be more revealing. Some of the burials, interestingly, may demonstrate more than one type of indicator, such as Skeleton II at Whitehawk which exhibits possibly an unusual burial position, along with ritual evidence in the form of artefacts, crime (possible deliberate killing), and is surrounded by blocks of chalk. The identification of deviant burial practice, however, relies on an understanding of what is usual. In the Early Neolithic of south-east England there is such variety that this is hard to pinpoint with any degree of certainty. Indeed, it could be argued that all burial practices related to individual, articulated burials is deviant from the potential norm of disarticulated, commingled disposal of the bones of the dead. Furthermore, the general low numbers of Early Neolithic burials in the archaeological record have been highlighted previously as unrepresentative of the number of people who would have lived during the period (e.g. Schulting, 2009), which could imply that the norm is archaeologically invisible (Cummings, 2017:91) and, therefore, that the burials in the archaeological record are the deviant ones, perhaps selected for differential treatment to safeguard the living in some way. Those burials in a small mortuary enclosure, such as at Nutbane for example, may not have been revered or memorialised as might be assumed due to the effort involved in building the long barrow around them, but instead may have been segregated somehow as an example to others or as a protective measure. In the Early Neolithic, perhaps difference was dealt with by containment. Such difference could be difficult to identify but conceivably could be to do with appearance, kinship or some such inherent quality or, conversely, to do with the behaviour of the individuals. In modern western society, the norm is to treat the dead respectfully and to honour them in death, giving a eulogy which praises and highlights the positive things in preference to the negative, providing comfort for surviving loved ones. Individuals with socially unacceptable traits or histories, however, are likely to be treated differently, perhaps quietly buried in an unmarked grave as, for example, the body of Mussolini was, following its public display and prior to its exhumation and eventual re-interment in the family crypt. It has been suggested that the evidence of bodily violence at chambered tombs may have been a criterion for particular individuals being selected for burial there (Fowler, 2010; Smith and Brickley, 2009:110) and that violence needed to be engaged with and confronted, such as through the communal act of monument construction (Cummings and Harris, 2011:374).

When relating the concept of social unacceptability to a young woman and infant, in the case of Whitehawk Skeleton II and IIa, it is perhaps more difficult to accept this as a possible explanation than one of positive memorial, particularly when compared to a male individual given similar treatment, such as the Shaft VI burial at Cissbury. Unconscious bias could affect interpretations of the potential meaning behind the rite, however. Skeleton II at Whitehawk was found in her defined grave during the same excavations as the other adult female, Skeleton I, who was found buried in a ditch without the apparent care and effort expended in the case of Skeleton II and the neonate. Inevitably, the two burials would have been considered in relation to each other, due to their demographic similarities and apparently comparable burial positions. It can be argued that in the 1930s, when these individuals were excavated, as would likely still be the case in the present day, a protective, maternal/paternal view of these young women could well have affected any interpretation, leading to a more probable view of them as victims rather than outcasts. Now, some eighty years later, evidence for possible violence to Skeleton II has been identified and perhaps supports this view, although in the absence of more evidence (and due to the limitations of the osteological paradox) the circumstances of death remain vague and open to interpretation, and indeed interpretational bias on the basis of gender and age. It is certainly not necessarily the case that a female buried with a neonate is naturally a victim and entirely innocent in behavioural terms (which in itself is, of course, dependent upon societal norms), although the treatment meted out to these two individuals could have been due to other factors entirely.

The inclusion of cannibalism as an indicator of deviant burial practice seems reasonable but its identification is difficult to achieve. A possible case identified in this research is at Whitehawk where burnt skull fragments in a hearth feature were interpreted as evidence of cannibalism:

> 'In the occupation layer in CIV occurred traces of a hearth surrounded by a wide scatter of ashes. In close relation with this hearth were found (1) a quantity of Neolithic pottery sherds; (2) parts of two human brain-pans and three small charred fragments of human skull; (3) a few animal bones and an antler of roe deer; (4) one mussel, 2 cockles; (5) 91 'pot-boilers' (calcined flints), and 22 fragments; (6) one small fragment of grain-rubber (Curwen, 1934: 111).
>
> One curious feature was the number of fragments of human skulls which were met with in all cuttings of this ditch except C viii. They were mostly found in or about the occupation layer, and chiefly represent fragments of brain-pans, three such fragments having been charred in the hearth in C iv, as already noted. It is difficult to avoid the view that these may be relics of cannibalism.' (Curwen, 1934: 112)

This was a simplistic but reasonable interpretation of its time against a backdrop of anthropological concerns with racial typologies, however, research in recent years has resulted in proposed methodologies for investigating possible cannibalism more closely. As noted previously, there is evidence for the burning of human remains in the form of cremation at Blackpatch flint mines, in a ditch at Staines causewayed enclosure, among the commingled remains in the long barrow at Ascott-under-Wychwood and at the non-monumental site of Yarnton. The identification of potential cannibalism can be achieved from a consideration of multiple factors including comparative analysis of the faunal and human remains for cut marks, types of burning and perimortem fractures (Villa *et al.*, 1986; Cole, 2010). At Whitehawk, for example, following the recent reassessment of the disarticulated human remains assemblage from the causewayed enclosure ditches there is *possible* evidence of perimortem trauma in several individuals but only deemed 'probable' in one case (Ponce, 2015). Two skull fragments of young adults have also been found to exhibit evidence of burning, as also noted in the original excavation report (Ponce, 2015; Curwen, 1934). However, it has been stressed that the evidence for perimortem trauma is slight and it is felt that there is 'no evidence of cannibalistic activities taking place on site and little evidence of interpersonal violence, aside from one individual with a possible head trauma and penetrating injury' (Ponce, 2015:95-99).

Analysis of the disarticulated human remains from a causewayed enclosure at Escalles in Pas-de-Calais, northern France, however, has recently presented a case for cannibalism based on evidence of fresh bone breakage, including to skulls, along with cut marks and exposure to fire (Praud, 2015). The excavator presents a differential diagnosis of defleshing prior to secondary burial, citing similarities to mortuary practice in southern England, but on balance argues that cannibalism is the most likely, in line with other examples in continental Europe. Although difficult to identify generally, cannibalism is particularly elusive in prehistoric archives due to the often poor preservation of the human remains over time and even as convincing a case as that at Pas-de-Calais is qualified with an alternative explanation.

Overall, however, there do seem to be tangibly possible instances of deviant burial practice in the data. The diversity of Neolithic mortuary practices in general make these difficult to elucidate as a pattern of behaviour, with the most likely being cremations, burials covered or contained by stone, flint or pottery, and those in possible seated positions. There are no observable demographic patterns to these but a wider exploration could clarify this aspect further. The under-representative number of burials for the Early Neolithic population could suggest that the observable burial practice for the Early Neolithic is, in effect, all deviant from the norm or, alternatively, that the articulated burials are deviant and the manipulation and treatment of disarticulated bones was normative.

<u>Burial orientation</u>

The comparison in the previous chapter of the two likely contemporaneous burial assemblages at the Nutbane and Park Farm barrows highlights patterns of burial orientation that appear not to be based on demographic considerations but potentially on other factors. The south-west-to-north-east orientation for all three Park Farm burials result in the two adults facing south-east due to their position on their right sides, and the nearby but separately interred juvenile facing north-west due to being on the left side. There is a possible archaeoastronomical explanation for this based on the position of the sunrise and sunset at different times of the year. While the sunrise is directly east at both the solstices in March and September, in the summer it moves more towards the north-east and in the winter towards the south-east. It could therefore be argued that the juvenile burial at Park Farm was buried in the summer and orientated towards the sunset and that the two adults there were also orientated towards the sunset but buried in the winter, perhaps reflecting a particular belief regarding the symbolism of fading light at the end of the day. Conversely, at Nutbane, Skeletons 3 and 4 are orientated south-to-north, on their right sides, therefore facing east and hence towards the sunrise. Skeletons 1 and 2 there, however, are orientated east-to-west on their left sides, hence facing south. It could be that the orientation of the head and feet were the concern when these burials took place, rather than the way the individuals' faces were symbolically looking towards. These different orientations could imply that Skeletons 1 and 2 were buried at a different time to Skeleton 3 as well as Skeleton 4, and radiocarbon dating would obviously be useful as a starting point in considering this further. The excavator noted the condition of the bone of Skeleton 4 to be better preserved that the other skeletons, suggested this was a later interment (de Mallet Morgan, 1959:24).

The burials at Wor Barrow, Dorset (not included in this research) provide an interesting comparison. The first two of the four adult male burials interred in the first phase were orientated west-east and, as highlighted previously, are believed to have been originally in an extended position, later having their skulls and legs manipulated identically to face to the right, towards the south (Allen *et al.*, 2016:9). It could be interpreted that the individuals' heads were pointing towards the sunset and their feet towards the sunrise. The third and fourth burials added during this phase were flexed and both orientated south-west-to-north-east, one on its left and one on its right, therefore one facing north-west (summer sunset) and the other facing south-east (winter sunrise). These could demonstrate deliberate alignment with the sun and hence deposition at different times of year; alternatively, however, it could merely indicate the best fit using the space available within the confines of the mortuary box or a more random orientation. Given the deliberate rearrangement of the first two individuals, if similar belief systems to those that governed the treatment of these were still active when the second two burials took place, it seems more likely that their orientation was deliberate. Significantly also perhaps, given their geographical proximity, burials 3 and 4 at Wor Barrow are orientated in the same way as all three Park Farm burials with heads to the south-west and feet to the north-east. Returning to Nutbane, Skeletons 3 and 4 there (the juvenile and potentially later adult male) were, as previously stated, orientated south-to-north. At Wayland's Smithy, which was suggested as a comparator for Park Farm (Richards, 1990a:27), three of the articulated or partially articulated burials there (of four included in the dataset for this research) were also orientated south-to-north, two of these, like Nutbane, were on their right sides and facing to the east (sunrise), with the other on its left facing west (sunset).

When attempting to establish possible intention for the deceased to face the sunrise or sunset, it could be concluded that this would be harder to achieve with a flexed corpse than an extended one. It seems the concept of solar alignments were first considered by early prehistoric archaeologists within the framework of the dominant Christian ideology at the time and its practice of west-east burial orientation (head to the west and feet to the east, except for clergy who are orientated the opposite way round), mirroring the orientation of Christian churches. It is possible, therefore, that centuries of giving consideration to this aspect of burial practice in prehistory was based upon theoretic bias which has become ingrained whereas Neolithic people may actually have had no beliefs relating to this at all.

In this small sample of articulated burials for the south-east of England, the most common burial orientation is south-to-north overall, with bodies placed either on the left or right, resulting in them facing to either the sunrise or sunset. This seems unlikely to be a pure coincidence but the argument against this is the other orientations recorded which suggests any particular practice may have been localised rather than a general pattern of belief or mortuary rite. South-to-north is also the most common orientation for juveniles and infants, both separately and combined, north-to-south for female adults and south-to-north for males. These orientations result in the individuals effectively facing either east or west depending on the side on which they were laid (exceptions being those few apparently laid on their backs). Females are laid both on their left and right sides, while all other demographic groups are mostly laid on their right, immature individuals to a significant degree within the context of this sample with only one juvenile on the left.

Archaeoastronomy has fascinated archaeologists since at least the early 20th century when Rear-Admiral Boyle Somerville observed that 'the occurrence of orientation in prehistoric structures has long been noticed' but not 'received from investigators much more than a passing comment' (Burl, 1983:5). The archaeological record contains some specific examples of interpretive burial alignments, for example a child facing the mid-summer sunrise on the Late Neolithic site at Woodhenge in Wiltshire (Cunnington, 1929). A Beaker burial at Stanton Harcourt in Oxfordshire has been described as being 'crouched with hands on shoulders, head to the north, looking east through the timber side of their coffin, through the gravel of the grave pit towards the sunrise', although the phrase 'through the timber side of the coffin through the gravel…' (Burl, 1983:40-41) is later longhand for 'orientated towards', as stated in the original excavation report (Grimes, 1960:40-41).

Archaeoastronomy gathered some pace in the late 20th century (e.g. Thom *et al.*, 1980; Wood, 1980; Ruggles and Whittle, 1981) - and indeed was the subject of a school mathematics project by the author at this time – and has more recently received more widespread attention and respect, with research continuing to develop this archaeological discipline (e.g. Silva and Campion, 2015; Ruggles, 2015). Much of the focus, however, has been on the alignments of megalithic monuments (e.g. Heggie, 1981) although, as this research has found, the orientations of the burials themselves have often been recorded (albeit not always in a consistent fashion), making it possible to attempt an understanding of any deliberate patterns of orientation within the burial rites themselves.

The pattern of orientation in this sample indicates a likelihood that, if there was intention behind the orientation of the bodies when they were deposited in the various Early Neolithic burial locations, it could well have been to allow them to face either the sunrise or the sunset in the east and west, respectively. However, this is simplistic and there are other orientations in the data based on inter-cardinal points which align with the known summer sunrise in the north-east and the sunset in the north-west, and the winter sunrise in the south-east and sunset in the south-west. In this data, therefore, adults face either the sunrise or sunset with a tendency for females to be orientated towards the sunrise; children tend to face the sunrise and males tend to align with the winter sunset and sunrise. It could be argued that these alignments represent an affinity with a specific solar alignment at a particular time of year based on beliefs pertaining to the cycle of the year and associated festivals or rituals. This opens up the possibility of interment being delayed until a specific time to coincide with solar events. Potential evidence for this could come in part from the archaeothanatological analysis of the burials, taking into account such factors as whether the burial was filled over time and whether it was bound or tightly shrouded, thereby retaining the joint articulations.

Although it is possible that burial orientations were not accurate enough to be aligned precisely, a more interesting interpretation perhaps is that the individuals were interred in the summer or winter and orientated accordingly to the sunrise or sunset. The issue of intention can be addressed in more than one way, with advocates for both probabilistic reasoning and consideration alongside independent evidence of other types (BAJR, 2016:3). Whereas alignments of monuments can be argued to have at least some practical basis necessitated by factors such as topography, for example (see Pope, 2007), this is arguably a less likely explanation for burials given, for instance, known practices in use today such as Christian burials being orientated west-to-east to facilitate them rising on the 'Day of Judgement' to face God in the east (Parker Pearson, 1999:6; Wells and Green, 1973; Rahtz; 1978). It is also known that incoming Christianity appropriated many elements from preceding pagan beliefs and the east-west alignment could have been passed down through the millennia in this way. This leads to the first of several limitations to the potential study of orientation in the Early Neolithic, that of potential bias in original recordings of burial orientations when widespread Christian beliefs may have led to interpretations stemming from the religious views of 19th/early 20th century investigators. Another issue is that mentioned above of unknown degree of accuracy in the methodology employed in measuring the orientations and indeed those of the Neolithic people themselves. Although archaeoastronomy offers some plausible explanations for burial orientation in Early Neolithic south-east England, it could well be that in seeking to identify patterns of behaviour in this regard there are other explanations equally deserving of consideration. The disparate range of burial locations and practices of course results in a non-uniform dataset on which to base any analysis. However, despite all this, there is a potential basis for further exploration of data from a wider area to test the hypothesis that there are demographic elements to the orientations of Early Neolithic burials.

Previously, research has been carried out on Anglo-Saxon burials in a cemetery in Finglesham in Kent where it was possible to investigate an observable change in alignment there over time (Chadwick Hawkes, 1976). Here it was concluded via experimental analysis that the burials were dug on sunrise bearings and that a subtle change of alignment there from north-east/north-north-east to a more easterly alignment, with a range of variation from north to south of east, there resulted from the adoption of Christianity. Furthermore, based on the azimuth of the solar arc, it was found that burials in the winter were largely male and in late winter/early spring or late summer/early autumn burials were mostly elderly and juvenile, which was aligned with influenza outbreaks in mid-April and typhoid in late August. This raises the issue of whether in prehistory observable orientations would have been based on the direction the head was pointing towards, or the orientation of the face of the corpse itself and what, if anything, this was orientated towards. Rahtz (1978:2) suggested the following possible factors: random, reverse, personal, mythical/holy places, areas of origins, resources or occupations, settlement or house sites, memorials of monuments, holy structures such as barrows, paths or roads, natural features, other graves of bodies, astronomical observations. This demonstrates well the complexity involved in reaching conclusions about the motivations behind any patterns of burial orientation in a general sense. However, demographic differentiation may be more fruitful, for example a study of burials in round barrows in east Yorkshire and Humberside (Tuckwell, 1975) found that the sex of the deceased was a key factor in the arrangement of the body within a grave and that males were laid on their left sides, orientated east-to-west and therefore facing south, and females were laid on their right sides, orientated west-to-east, also facing south. It was subsequently observed that usually in these round barrows a male individual was interred first, followed by either a female or juvenile (Muzoguchi, 1993). Further afield in Romania, a recent study of a Neolithic necropolis burial population has found that the east-west burial orientations were determined by solar observation, specifically the sunrise and sometimes sunset on what has been interpreted as feast days (Szücks-Csillik and Comsa, 2012). The definition of the orientation is not explained in the paper but assumed to be head to the east and feet to the west. As with Tuckwell's research, the Romanian study has also found correlations with seasonal patterns of illness.

Unfortunately, there is no correlation between any of these findings and those in the current research for south-east England, however this study has found that all age groups are most frequently buried on their right side overall. Females are most often orientated north-to-south on either side so facing east or west, males are mostly orientated south-to-north mostly on their right, therefore usually facing east, and that children are generally orientated south-to-north on their right, therefore facing the east. Burials facing the sunset could perhaps represent the end of life having occurred at the correct or natural time. Burials as a whole, both male and female adults and children, are more often orientated to the sunrise, however, and conjecturally it could be posited that the choice of orientation may have been influenced by the type or cause of death. It is, however, a small sample, and therefore a larger scale study would be necessary to reach any detailed conclusions about any potential patterns of orientation.

The other celestial object that could be relevant to this line of enquiry is, course, the Moon but, due to its rapid orbits in comparison with those of the Earth around the Sun, alignment of burials would have been more difficult to achieve in the first place and harder to identify now due to temporal variation. Also worth noting are other planets, constellations and celestial events such as comets, meteor showers and eclipses that would have been visible to the people of the Early Neolithic as they are today and would likely have had even more of an awe-inspiring effect back then when the night skies were routinely dark and astronomy would have been less understood.

The current study has focused on potential solar alignments but, of Rahtz's other proposed factors affecting orientation, further investigation on a wider scale could consider any evidence for alignment with other monuments nearby, natural features in the landscape, other known burials nearby, areas of origin (perhaps by strontium isotope analysis) and nearby settlements, these being potentially tangible, as opposed to the remainder of Rahtz's list which could only ever be conjectural. It has been suggested more recently that megalithic tombs were purposely located within the landscape of the Neolithic cosmos, symbolising the reality and closeness of the dead and people's changing view of their place in their world (Lewis-Williams and Pearce, 2005:195; Whittle *et al.*, 2011). This could be extended to argue that burials were aligned between different locations in the landscape, perhaps reflecting connections between different groups or individuals against a background of memory and knowledge (Whittle, 2010:39-42). It has been argued that mortuary structures effectively controlled both the dead and the living (Jones, 2005; Jones 2010:117-118) and it seems possible that this could also apply to non-monumental burials with clues to this being perceptible in their orientations within the local landscape. It has been argued that, for many indigenous cultures, burial rites *per se* are not necessarily part of their world despite experiencing grief as all humans do but, in common with prehistoric, non-literate societies, they require a form of calendar to organise their society around essential matters, such as availability of food. Therefore, rituals involving the repetition of critical knowledge and the use of special places in their landscape were essential memory tools (Kelly, 2016:25-27) and this seems plausible when considering the role of mortuary behaviour during the Early Neolithic.

Regarding solar alignments, for the sample overall, most alignments are with the sunrise rather than the sunset and most of these involve the face 'looking' rather than the head pointing towards the east. For instance, two adult males at Nutbane long barrow and an adult male at Whitehawk causewayed enclosure are orientated with their heads to the sunrise, and the head of an adult female at Whitehawk points to the sunset. It is often easier to detect possible patterns to burial orientations on a site-by-site basis in this small study, which could indicate localised foci, perhaps centred around similar overriding beliefs in society and practices on a larger scale over time. For example, as mentioned previously, at Nutbane long barrow two of the individuals were on their left, orientated east-to-west, while the other two, which differ in part both demographically and potentially temporally, were on their right, orientated south-to-north. The reasons behind this could be to do with the apparently precise orientations that, in the case of the first two, face the sunrise and in the second two point towards it. Arguably, though, it could be the *feet* of the second two, pointing towards the sunset, that were the significant aspect. Alternatively, there could be a relationship between the orientations of the burials and that of the long barrow itself to which the mortuary enclosure is attached, which is orientated north-to-south and may in turn relate to other monuments within the landscape. A further possibility, as suggested by Rahtz (1978:2) in general terms, is that there were other burials, settlements or landscape features nearby, to which these burials were orientated. Overall it seems that localised patterns of behaviour are more likely to be fruitful than seeking a more general consideration.

<u>Grave goods</u>

Thorpe (1994)'s Wessex study found only five burials with grave goods, in the form of pottery and flints, and all were adults of which three were sexed as male, the rest indeterminate. In the current study, there are 39 finds associated with burials, found mostly at causewayed enclosures, where they are generally with females, followed by long barrows and non-monumental sites where they are mostly found with males. Overall, females are found to a greater or lesser extent with most categories of artefacts identified, that is animal bone, arrowheads, other flint implements, fossils, decorated chalk, pottery and axes but not with shells or bone implements. Males are not found with fossils which, in this small sample, are associated only with female and infant burials.

Leaf-shaped arrowheads, archetypal of the Early Neolithic period, are found mostly with burials in the area around West Sussex, East Sussex and Surrey, with some in the north of the region in Oxfordshire. Their association with burials can seemingly be either symbolic or, in some cases, an embedded weapon likely responsible or contributory to the death of the individual, as in the case of an adult male individual at Wayland's Smithy where two further individuals, an adult male and adult female, were also found closely associated with leaf-shaped arrowheads (Atkinson, 1965:130; Whittle *et al.*, 1991; Whittle *et al.*, 2007:107). All three of these arrowheads were lacking their tips, suggesting that the two which were not embedded were used as weapons rather than symbolic inclusions, particularly given the comingled mortuary deposit from which they were recovered, which has been interpreted as likely episodic, although the temporality of this is unclear. Whittle *et al.* (2007), however, argue that finding evidence of injury in such ancient bones is generally very unlikely and the complex nature of the disarticulated bone assemblage makes the association with particular individuals less than entirely certain.

Also in this database, at the Ascott-under-Wychwood long barrow in Oxfordshire, four leaf-shaped arrowheads were found in and around the burial mound, in cists and passages, with one embedded in the 3rd lumbar vertebra of a young adult male. Other sites where leaf-shaped arrowheads have been found embedded in human remains include West Kennet long barrow (Piggott, 1962), a Neolithic house and burials at Fengate near Peterborough (Pryor, 1976) and Crichel Down, Dorset, a round barrow containing an adult inhumation in a 'crouched' position on a layer of flint nodules (Piggott and Piggott, 1944 no. 11).

At Blackpatch in East Sussex, a leaf-shaped arrowhead was found to the west of an adult male skeleton behind the shoulders, along with several other objects and faunal remains, and the adult female buried in Shaft H at Cissbury flint mines was interred in association with a leaf-shaped arrowhead, as well as pottery and pig bones. Meanwhile an adult buried in a non-monumental flat grave at Whyteleafe in Surrey was found with a leaf-shaped arrowhead, Neolithic axe and animal bones. This could suggest that in the south-east region of England, leaf-shaped arrowheads associated with burials are not restricted to one particular type of location or either gender, however, they are noticeably absent from burials at causewayed enclosures. This could reflect a non-violent function for causewayed enclosures in the region perhaps, compared with long barrows in particular where, it has been suggested, the presence of leaf-shaped arrowheads in large assemblages of commingled remains may result from violent events, such as at Wayland's Smithy (Whittle *et al*., 2007:118). However, two young males with embedded arrowheads in their thoracic spines at Hambledon Hill causewayed enclosure (Mercer, 1988; Mercer and Healy, 2008) to an extent counter this argument as a general rule, although it could still be a valid observation for individual sites. It is questionable whether leaf-shaped arrowheads associated with burials can be generally described as grave goods as there seems convincing evidence of embedded ones, at least, representing violent acts rather than benign symbolic inclusion.

The fossilised echinoids in this sample are found almost exclusively with females and infants at Whitehawk causewayed enclosure in East Sussex, the one exception identified being found within the burial deposit in the southern outer passage in the long barrow at Ascott-under-Wychwood. The burial deposit itself comprised the poorly preserved remains of two individuals aged 17-25 years and 25-35 years, respectively, of indeterminate sex and the echinoid from this deposit was interpreted as probably collected due to curiosity value or because they were thought to possess special properties (Benson and Whittle, 2007:16).

Commonly occurring species of echinoids, the ovoid *Echinacorys scutatus* and the heart-shaped *Echinocorys mircaster*, are found within Cretaceous and Jurassic rocks, throughout the area of this study in south-east England, extending into East Anglia where Etton causewayed enclosure is located (see below). Fossilised echinoids have long been associated with folklore and it has been suggested that there is a correlation between their distinctive pentameral appearance and that of the symbolic five-pointed star of ancient religious beliefs. In the archaeological record they date back as far as the Palaeolithic from which there are examples of flint implements incorporating echinoids, likely chosen for their aesthetic or symbolic qualities. Their place in folklore was highlighted in the 20th century by Herbert Toms, curator of Brighton Museum, who noted their ubiquity in downland soils but observed that few from these contexts retained their outer shell markings, representing instead the inner casts (Toms, 1926:264). John Pull also reported their presence in ancient downland burials, interpreting them as evidence of prehistoric people having ‘advanced to the stage where religion and priesthood had replaced these older and more primitive things; the finding of these particular symbols, in association with their dead, confirms the view that they had been purposefully placed in their graves for special religious reasons’ (Pull archive, Worthing Museum, Article No 5). Considering the echinoids in the burials at Whitehawk, Curwen suggested that they acted as charms (Curwen, 1934:108-110) and it has been proposed that the two echinoids buried with Skeletons II and IIa represented one fossil for each body (McNamara, 2010:72).

Of the various folkloric beliefs associated with echinoids (commonly referred to as ‘shepherd’s crowns’ or ‘fairy loaves’ in southern England), the author is aware of anecdotal evidence from her own family in Sussex of the practice of burying a fossilised echinoid in a vegetable garden to ensure a good crop, which, it has been suggested, may relate to the practice of burying thunderstones (another name for echinoids in Scandinavia and southern England and also for prehistoric flint axes) in holes in ploughed ground to ensure fertile fields and bountiful crops (McNamara, 2018). It could be wondered whether the placement of the echinoids at Whitehawk with the two young females, one with a neonate, may be related to beliefs around fertility and growth.

Other burials with echinoids in Britain are also adult females, such as an Anglo-Saxon burial in Bury St Edmunds, Suffolk, where the echinoid was found apparently placed in the hand and, interestingly, the burial of an Anglo-Saxon leper near Cambridge who had a leather bag around her neck containing a single echinoid (McNamara, 2010). More closely related in time and location to the Whitehawk burials are 12 Bronze Age barrows on Ashley Down on the Isle of Wight, containing burnt human remains, all but one of which were found to be associated with echinoids (Evans, 1872); and an early Bronze Age burial of an adult female and infant was found near Dunstable, surrounded by hundreds of echinoids (Smith, 1894).

Figure 6.8: Fossilised echinoids from burial of Skeleton II and IIa at Whitehawk (photograph: the author's)

Echinoids have been found in non-burial Early Neolithic contexts elsewhere in southern Britain, for example at Hambledon Hill causewayed enclosure in Dorset, interpreted as deliberately collected by visitors to the enclosure (Mercer and Healy, 2008). A round stone with a pecked hole from an *in situ* structured deposit in one of the causewayed enclosure ditches at Etton in Cambridgeshire is believed to be a fossilised echinoid and has been interpreted as having been modified to resemble a skull, with the hole representing the *foramen magnum* (Pryor, 1998:268-9). This does not seem an unreasonable conclusion to have reached given that skeuomorphic fired clay vessels have also been found there within the ditches.

Research has identified three possible types of use for echinoids in life, as ornaments (beads or pendants), offerings (burials or deposits) and tools (striking or retouching, such as scrapers), in most cases determined by the shape (Dembard and Néraudeau, 2001). It could be argued that the use of the echinoid in life was reflected in the purpose of its inclusion in the burial. There are a number of different species of fossil echinoid. Those found at Whitehawk are *Echinocorys scutatus*, commonly found in the chalk outcrops of Sussex, Dorset, Hampshire, Wiltshire and Berkshire, and believed by Toms to be the type known colloquially as shepherd's crowns, although others are of the opinion that this is more correctly applied to the heart-shaped *mircaster* type. The name 'shepherd's crown' is believed to originate from the Celtic word 'sidhe' which refers to Irish earthen mounds, 'home of the fairies' (McNamara, 2010:129).

Both in this database and elsewhere, where demographic information exists, there is a clear absence of association of fossilised echinoids with adult males, rather they are mainly found with adult females or females buried with children, as at Whitehawk and Dunstable. Further afield, other types of fossils have been found in association with Neolithic burial places, such as a large ammonite encased in Lias limestone and *Gryphaea arcuata* (fossilised oyster, known in folklore as 'devil's toenails') built into the structure of the Stoney Littleton long barrow in Somerset, and a significant quantity of Carboniferous fossils within the chamber and cairn infill of the Ballycarty passage tomb in County Kerry, south-west Ireland (Wyse Jackson and Connolly, 2002). Again, the presence of and specifically the inclusion in or surrounding of a burial with these specific objects – in the case of Dunstable in vast quantities – does not necessarily imply a respectful memorial; equally it could represent a protective measure for either the deceased or the living, perhaps even both. It would therefore be interesting to explore this further on a wider scale.

Chalk objects in this sample are similarly concentrated around East and West Sussex in the South Downs with none noted in the North Downs part of the region. These have been found in the causewayed enclosure at Whitehawk, and at the flint mines at Blackpatch and Cissbury. At Whitehawk, the grave goods with the young adult female Skeleton II, buried with a neonate, included what the excavator described as 'two chalk weights, one large and one smaller, each broken through a perforation' and two of the large chalk blocks that surrounded the grave were described as having 'imperfect or broken perforations' (Curwen, 1934:108). The 'chalk weights' were described in the Finds section of the excavation report as 'two small pendants of chalk, each perforated eccentrically…They were both found immediately beneath Skeleton II…and may therefore have been used as ornaments. The perforations are worn smooth all round, and not only on one side' (Curwen, 1934:131). Under Varndell's (1991:100-3) typology for chalk objects these Whitehawk artefacts would be described as 'perforated objects', however under Teather's recent reassessment they are categorised as 'cups' which applies to chalk objects under 10 cm having the form of a round inset depression (Teather, 2016:69,77). Under this system, other 'chalk cups' from Early Neolithic contexts have been found at causewayed enclosures The Trundle in West Sussex, and Windmill Hill and Knap Hill in Sussex, Thickthorn Down in Wessex, and the flint mines at Grimes Graves in Norfolk and Cissbury in West Sussex, demonstrating their fairly widespread presence at this time, although not necessarily in burial contexts.

Also at Whitehawk, a chalk object ('plaque' under Teather's system) with 'parallel and intersecting incised lines' was found above the 7-12 year old infant buried in Hole 51, and described by the excavator as resembling a 'chessboard' (Curwen, 1936:87). A separate category is 'charms' (Teather, 2016) which describes smooth and decorated lumps under 10 cm in length of various shapes, usually fully decorated with a flint blade, and this applies to the four chalk objects found with the young adult female found in Shaft 27 at Cissbury (pictured in Figure 6.9).

The small group of burials associated with chalk objects in this database are all young females or infants (one a neonate, the other being a 7-12 year old child). As with the fossil echinoids, there is the hint of a pattern here, due to the absence of any male individuals exhibiting this particular burial rite. Herbert Toms carried out investigation into the folklore and history of both 'shepherd's crowns' and 'witch stones' and, as with echinoids, folkloric parallels can be drawn with the perforated chalk objects from Whitehawk which bear a marked resemblance to naturally occurring flint or chalk 'witch stones, also known as 'hag stones', 'ague [fever] stones' or simply 'lucky stones', long believed to bring luck and bring protection from all manner of ills and often suspended from doorways or trees, or worn as pendants for this reason and often associated with 'shepherd's crowns' or fossilised echinoids (Duffin, 2011). It is entirely possible that beliefs connected to both these types of artefacts began during prehistoric times, perhaps specifically the Early Neolithic if not before, and were passed down through the ages.

Figure 6.9: The four 'chalk charms' that accompanied the burial in Shaft 27 at Cissbury (photograph: the author's)

Demographically, as has been noted previously, in the data for south-east England, fossilised echnoids, perforated and decorated chalk are only found in direct association with female and infant burials. Shells, however, are only noted with male burials and pottery is more often found with male burials.

Age-wise, the proportion of juvenile burials with associated finds was only 9% and included flint implements, decorated chalk, shells, pottery and animal bone. Despite their being a very small proportion of the overall assemblage, they can be compared as a group (Table 28).

Site type	Site	Age of individual	Associated finds
Non-monumental	Itchen Farm, Hampshire	4-6 years	Flint flakes, blades, spalls, pottery sherds, large sarsen at feet
Causewayed enclosure	Whitehawk, East Sussex	Neonate (buried with adult female)	Perforated chalk, fossil echinoids, partial ox radius
Causewayed enclosure	Whitehawk, East Sussex	7-12 years	Pottery sherds, incised chalk
Oval barrow	Park Farm, Berkshire	16 years	*Bos* molar, vole skull
Oval barrow	Barrow Hills, Oxfordshire	1-12 years	Blade-like flint near pelvis

Table 28: Articulated juvenile burials with associated finds

Articulated burials of children are unusual in the Neolithic and in this research are restricted to one non-monumental location, a causewayed enclosure and two oval barrows and they are located mainly in the western half of the south-east region in Hampshire, Berkshire and Oxfordshire with the two at Whitehawk in East Sussex providing isolated examples on the eastern side. The grave goods/associated finds for the articulated juvenile assemblage comprises flint flakes and blades, pottery, incised chalk, perforated chalk, fossilised echinoids, and animal bone (ox, cattle and vole). These are all found in adult burials as well, however, it is interesting to note the absence of arrowheads, shells, bone implements and axes in the juvenile data. Clearly, this could be due to the small sample size, however, it could be worthwhile exploring this more widely to see if there is evidence of age differentiation in terms of grave goods selection. A further line of enquiry is that of association of juvenile grave goods with those related to adult sexes and it is noticeable, as discussed above, that fossilised echinoids and decorated chalk are found only with females and infants.

It is questionable whether associated finds in burials are symbolic, perhaps in relation to the perceived afterlife, or memorially representative of something in life. Grave goods with children's burials are often used to draw conclusions about gender due to their association with a particular sex in adulthood (e.g. Pader, 1982:129-131). A juvenile burial at Hambledon Hill causewayed enclosure was found with two chalk objects behind the skull which were interpreted as implements for winding hair around into a bun, on the basis of their size and position and their smoothed, worn state (Mercer and Healy, 2008:638). This seems perfectly plausible as an explanation as this type of hairstyle is known to date back to ancient times, however it seems equally likely that the objects may have been decorative or even functional in some other way, or indeed may have moved from their original position over time giving a false impression. If there were other examples it would make comparison possible; it is probable this particular grave good would be assigned to the female sex due to known historical associations but, of course, this would not necessarily have been the case.

Shells in the current research were found only with adults and these were all male individuals with one exception at Cissbury. The shells comprised those of land molluscs at Whitehawk causewayed enclosure, Blackpatch and Cissbury flint mines and Wayland's Smithy long barrow, mussel shells at Whitehawk and at the non-monumental burial at Nethercourt Farm where there were also oyster shells. The land molluscs found with the Cissbury flint mine Shaft 6 burial were *Helix nemoralis* (now called *Capaea nemoralis*), a common variety with attractive striped shells also found with two burials at Blackpatch flint mine, along with what were recorded as *Cyclostoma elegans* (now called *Pomatias elegans*), a species of operculate snails with a circular aperture; the land snails associated with the burials at Whitehawk were not identified in the report. All but Wayland's Smithy are relatively close to marine environments although Cissbury and Blackpatch are situated inland on the Sussex Downs and Whitehawk, although along with Nethercourt Farm in Ramsgate is geographically closest to the sea, was noted to have a general paucity of marine shells in its molluscan assemblage. This was interpreted by the excavator as reflecting a lack of importance attached to this type of diet and that the proportion of 'dead' shells found on the site indicated they had been taken to the enclosure for other purposes than consumption (Curwen, 1934:130). All varieties listed are potentially edible and, although not presently consumed, are all are common occurrences on chalk downland; recent research has found evidence of the spicing of terrestrial and marine foods in the western Baltic during the Neolithic using *Alliaria petiolata* (garlic-mustard seeds) (Saul *et al.*, 2013) which would have made snails, a nutritious food rich in protein, iron and zinc, more palatable in the same way that garlic enhances escargots today. However, the presence of shells in burial contexts could represent their value as treasured or decorative items, or as symbolic artefacts imbued with meaning. Shells in the burial chamber at Bryn Celli Ddu in Anglesey, for example, have been interpreted as representing the significance of water and the sea (Lewis-Williams and Pearce, 2005:189). Although in the absence of a particular arrangement suggestive of a form of adornment, it is possible that shells had a dual purpose, combining sustenance and decoration or symbolism, reflecting perhaps a wider picture of a Neolithic cosmos of intertwined pragmatism and spirituality, incorporating what was available in the locality into their needs and developing beliefs.

It has been suggested that texture was an important experience for people in the Neolithic and the haptic qualities of artefacts such as pottery would have been valued (MacGregor, 1999). It could be that the significance of an object included in a burial – in the case of the current research, for example, a decorated chalk block – was not so much the appearance of the end result as the way it felt or even the process of its transformation from a plain piece of chalk to a decorated piece and there is ethnographic evidence of finished objects being discarded in some societies (Cummings, 2002). Looking at the artefacts associated with burials in this study, outlined above, they could be summarised as: stone implements, bone implements, implements manufactured from human-made material, and natural objects with decorative or symbolic characteristics or modifications. Of course, this is not to say that those objects usually described as 'implements' due to their understood use in life did not convey a similar – or different – meaning in death. All of the artefacts could, therefore, represent either or both utility or symbolism, and this may well have been variable and based on individual or group concerns or beliefs, possibly concerning the age or sex of the dead.

Location may be a factor to consider in relation to associated grave goods with burials. It has been argued that the placement of utilitarian implements used in the construction of a monument with the burials reflects the objects' importance in the building process (Cummings, 2011:46). In this research, as shown in Table 13, there are flint implements associated with burials at long barrows, however, their presence, when not directly within a grave, is open to interpretation and this could range from being 'laid to rest' having served a specific purpose to being an offering to the gods or symbolic in some way, either connected with the deceased or the living, perhaps to a special place within the landscape . Again, it could also be the case that the material of the objects was more important than the objects themselves (Ingold, 2007; Cummings, 2011:30,46).

Observations on the pathology and trauma

As stated previously, this study did not set out to conduct a detailed analysis of pathology and trauma for the individuals in this database. However, these were inevitably noted during the course of the research, as summarised in Chapter 4. There are some pathological conditions recorded during the current research that were not mentioned in the Neolithic data for Roberts and Cox (2003)'s comprehensive analysis of health and disease from prehistory to the present day in Britain. These include the congenital conditions of persistent metopic sutures in an adult male at Nutbane long barrow (de Mallet Morgan, 1959), an adult female at Whitehawk causewayed enclosure (Curwen, 1934), wormian bones in individuals at Coldrum long barrow (Wysocki *et al.*, 2013), supernumerary ribs in a juvenile at Ascott-under-Wychwood long barrow (Benson and Whittle, 2007), septal aperture to the humerus in an adult female at Barrow Hills barrow (Hey *et al.*, 2016), a palatine torus in an adult female at Whitehawk causewayed enclosure (Curwen, 1934) and an adult male at Barrow Hills (Hey *et al.*, 2016), and spina bifida occulta in an adult of indeterminate sex at

Ascott-under-Wychwood (Benson and Whittle, 2007). Developmental defects identified within a prehistoric population can facilitate interpretation of rate of occurrence, biological affinities and cultural and environmental influences (Barnes, 1994:5). It is therefore advantageous to include these abnormalities in any osteological study although the record for any prehistoric population is variable and often incomplete, making large scale population studies difficult. The most value therefore is likely to come from the identification of biological affinities within individual sites, and local or regional groups.

The current research has identified one possible case of myositis ossificans traumatica (the author's differential diagnosis would be an osteoma) to the fibula of an adult male individual at Nutbane long barrow. This results from local trauma to a muscle or tendon by an external force which in turn triggers an inflammatory response and the formation of new bone and connective tissue on the affected area (Saartje *et al.*, 2012). This condition was not mentioned in the Neolithic section or for any period in Roberts and Cox's study, probably due to an absence of evidence as its aetiology has been understood for some time (e.g. Resnick and Niwayama, 1995). It was not noted, however, in the original excavation report (de Mallet Morgan, 1959). Perimortem trauma in prehistory has received increased attention in recent years, since Roberts and Cox's research was published, and its identification has facilitated debate around the level of interpersonal violence in the past (e.g. Schulting, 2012; Thorpe, 2006). This has been greatly aided by reassessments of Neolithic archives such as that for Wayland's Smithy (Whittle *et al.*, 2007) and Ascott-under-Wychwood (Benson and Whittle, 2007), for example.

Finally, Roberts and Cox discuss benign neoplasia in the form of 'ivory' osteomata, an osteid osteoma in an adult male at Hambledon Hill causewayed enclosure with this condition, and a case of osteochondroma in a Neolithic individual identified by Chamberlain *et al.* (1992) and they note that these tumours are more common in males than females (Roberts and Cox, 2003:62). There is, however, no mention of the odontoma identified in the palate of the adult male articulated burial at Offham causewayed enclosure (Figure 6.10). It was commented at the time of excavation that these benign cysts were of uncertain aetiology (Drewett, 1977:228) and this would seem to still be the case (Satish *et al.*, 2011).

Figure 6.10: Odontoma (arrowed) to left palate of male burial at Offham Hill causewayed enclosure (photograph: the author's)

The current database records 'squatting facets' noted to the talocrural region of Skeleton I at Whitehawk causewayed enclosure and also Skeleton II there, along with a 'low platymeric index' (flattening of the femorae), both examples of non-metric variation given credence in the late 19th/early 20th centuries when anthropologists believed that prehistoric people had been uncivilised and that aspects of their primitive lifestyles, such as squatting due to having no chairs, and their racial ancestry resulted in such observable skeletal characteristics. This approach has since been discredited due to a greater awareness of normal variation within populations and these anomalies are not included in present day osteological analyses. Incidentally, the palatine torus in the palate of Whitehawk Skeleton I, noted above as a congenital trait, was categorised in the original excavation report as probably due to 'strenuous tooth work' (Curwen, 1934: 124) and this remains a possible example of occupational stress (Ponce, 2015).

There are, therefore, some issues apparent when attempting to synthesise previous pathological assessments of prehistoric assemblages with more recent ones and these can be affected by factors such as changes in theoretical frameworks, advances in diagnostic techniques in skeletal remains and inherent variation in analyses over time. Further research into the pathology exhibited in the Early Neolithic skeletal remains from south-east England could identify any demographic patterns, specifically through analysis of trauma, congenital abnormalities and musculoskeletal stress markers. For example, at West Kennet long barrow, analysis of musculoskeletal stress markers has found that male members of the burial assemblage ran and jumped more than females and the two sexes had been routinely involved in activities requiring different arm movements, although both males and females participated in strenuous activity (Wysocki and Whittle, 2000:595).

Of the pathology noted during this research there are some interesting cases worthy of note. As mentioned in the previous chapter, at Nutbane long barrow, Skeleton 1, an adult male individual, was noted in the original osteological report to have possibly had his upper median incisors deliberately extracted during life. This interpretation was based on antemortem tooth loss and wear to the opposing incisors which were 'worn laterally but relatively unworn mesially, forming a noticeable peak in the midline', whereas the other remaining teeth were in sound condition and this was related to a known custom in Africa, both ancient and modern (de Mallet Morgan, 1959:46). The mandible and maxilla are shown in Figure 6.11 and had been previously glued together, probably at the time of the original assessment, making reassessment of the dental attrition difficult.

Figure 6.11: Maxilla and mandible from Skeleton I at Nutbane long barrow (photograph: the author's)

This observation of Skeleton 1's dentition contrasts with the wider area of antemortem tooth loss exhibited by the adjacent Skeleton 2 which exhibits significant wear to all teeth present. The practice of dental ablation has been identified on all continents of the world from the Neolithic to the present day and is closely aligned with other forms of modification such as chipping, filing, inlays and bleaching (Russell *et al.*, 2013: 318-9); it is described as the longest-lasting type of bodily modification in the archaeological record (Burnett and Irish, 2017). A handful of other examples are recorded from other possible Neolithic contexts in Britain including, similarly to the case at Nutbane, the upper medial incisors of an (unsexed) individual from a cave at Perthi Chwareu in Denbighshire, North Wales and during investigations in 1909 and 1912 at Dog Holes cave at Warton Crag, Lancashire, three further cases of antemortem extraction were identified (Jackson, 1914). One of these, again, involved the extraction of the two median incisors from the maxilla of an unsexed individual; the other two were an adult male whose 2nd lower premolars on both sides had been extracted and a female aged around 16 years whose lower canines, incisors and premolars had been extracted. Finally, a case of filed incisors is mentioned at Belas Knap long barrow in Gloucestershire (Jackson, 1914).

Research has found examples of prehistoric dental ablation from around the world although it is suggested there are multiple possible explanations for this practice, ranging from rituals for rites of passage, status, tribal identity, safety, hunting success, control of the elements or simply 'tradition', to pathological reasons such as infection, age-related periodontal disease, and congenital abnormality (Tayles, 1996:333). It has also been highlighted that use of tools can result in the same appearance (Merbs, 1968). Tayles (1996) defines the identification of dental ablation as the repetition of symmetrical patterns of loss in individuals of all ages with no concurrent evidence of pathology in the alveolar bone. Research has identified links between gender and the cultural practice of dental ablation, for example Robb (1997) found it was clearly associated with females in the Italian Neolithic and suggested it may have been an optional rite of passage, perhaps associated with ideas of physical attractiveness at that time, as marking the transition to adulthood or as a mourning gesture. Russell *et al.* (2013:319) in their study on sex and gender differences in tooth loss and edentulism suggest that tooth ablation reflects social status, rites of passage (puberty/initiation, marriage), or mourning the death of a leader, relative or loved one, the latter being particularly pertinent to the current research. However, the example from Nutbane appears to be an isolated one within the database and a wider search would be necessary to identify any further instances with which to consider the nature and extent of dental modification during the Early Neolithic and indeed its ongoing existence in later periods, such as the mummified Bronze Age female at Cladh Hallan (Parker Pearson *et al.*, 2005), mentioned earlier.

Several assemblages exhibit significant pathological indicators for the population as a whole, for example at Whitehawk causewayed enclosure there are multiple examples of osteoarthritis in young individuals (Ponce, 2015), suggesting an unusually high level of trauma in everyday life resulting in early onset of joint disease. The evidence for violent trauma includes a significant number of individuals with cranial trauma at Coldrum long barrow (Wysocki *et al.*, 2014) and instances of possible perimortem trauma to young male and female adults at Whitehawk causewayed enclosure, although only one case has been categorised as 'probable' due to the condition of the bone (Schulting, 2012; Ponce, 2015). A summary of the trauma data collected during the course of this research is given in Table 29. The *Gathering Time* monograph (Whittle *et al.*, 2011:718) includes a map of violent episodes in the Early Neolithic across southern Britain in the form of cranial trauma and arrowhead wounds (Figure 6.12). This includes evidence from Coldrum, Staines, Ascott-under-Wychwood and Wayland's Smithy, all of which are classed as 'interpersonal violence' with the exception of Wayland's Smithy where the evidence for violent trauma has been interpreted as 'collective violence' in the form of a massacre event (Whittle *et al.* 2007a).

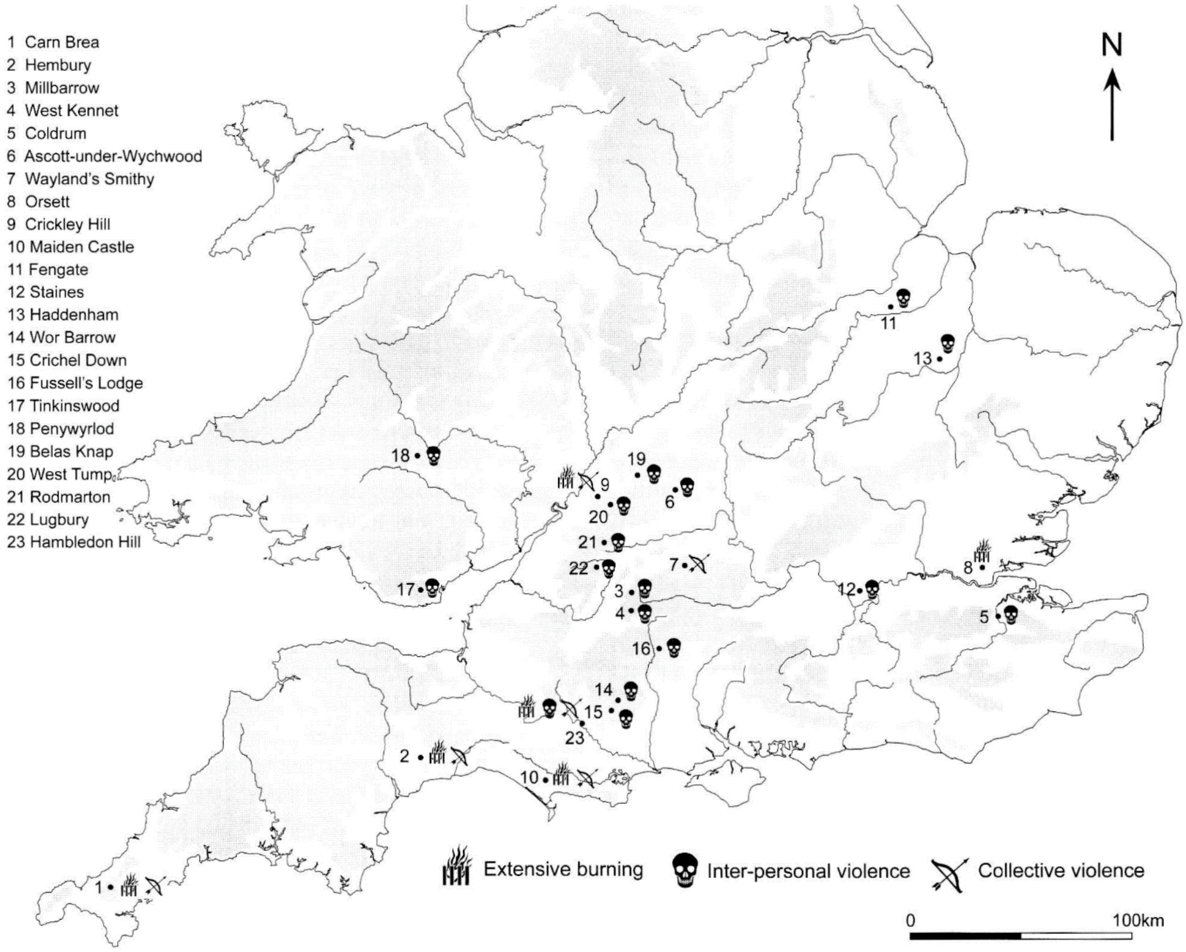


Figure 6.12: Map of violent episodes in southern Britain in the fourth millennium cal BC, recorded in the *Gathering Time* project (Whittle *et al.*, 2011:718,figure 14.37)

The database for the current research has also included evidence for trauma from Whitehawk, which was reassessed after 2011 (Ponce, 2015), Chalk Hill (Shand, 2002; Clark *et al*., 2019), and the newly discovered Early Neolithic monument in Berkshire (McKinley, 2018), along with a healed fracture at Lyneham (Schulting and Wysocki, 2005:114,119,121). Whittle *et al.* (2011:719) found a 9% proportion of trauma in 350 skulls examined from southern England and, of these, there were more instances of violence in the west of the region, including Wessex, and they suggest this may be due to the smaller number of collective deposits and less frequent survival of bone in the east.

Age/Sex	Site	Evidence for trauma
Adult female (articulated)	Cissbury flint mine	Postmortem cranial injury
Adult female (disarticulated)	Staines causewayed enclosure	Diagonal slash to arm
Adult male (disarticulated)	Staines causewayed enclosure	Two healed head wounds, possible perimortem head trauma and decapitation
Adult female (disarticulated)	Chalk Hill Causewayed enclosure	Cut mark to vertebra – possible decapitation
Adult (disarticulated)	Eton rowing lake Non-monumental/causewayed enclosure	Gnawing marks to clavicle
Adult male (disarticulated)	[Berkshire monumental site]	Flint knife injury to head, healed and unhealed, cut marks (McKinley, 2018)
Adult male (disarticulated)	Ascott-under-Wychwood long barrow	Embedded arrowhead to lumbar vertebra
Adult (disarticulated)	Ascott-under-Wychwood long barrow	Fracture and dislocation of atlas and axis
Adult female (disarticulated)	Wayland's Smithy long barrow	Embedded? arrowhead
Adult male (partially articulated)	Wayland's Smithy long barrow	Embedded? arrowhead
Adult male (disarticulated)	Wayland's Smithy long barrow	Embedded? arrowhead
Adult female (disarticulated)	Lyneham long barrow	Healed depressed fracture to left parietal bone of cranium
Adult female (articulated)	Whitehawk causewayed enclosure	Gnawing marks to two ribs on left side
Adult disarticulated)	Whitehawk causewayed enclosure	Burnt cranial fragments
Adult (disarticulated)	Whitehawk causewayed enclosure	Burnt cranial fragments
Adult (disarticulated)	Whitehawk causewayed enclosure	Linear cut mark
Adult female (disarticulated)	Coldrum long barrow	Unhealed cranial fracture, cut marks
Adult (disarticulated)	Coldrum long barrow	Unhealed cranial fracture, cut marks
Adult female (disarticulated)	Coldrum long barrow	Healed cranial fracture
Adult male (disarticulated)	Coldrum long barrow	Cut marks to femur
Adult male (disarticulated)	Coldrum long barrow	Cut marks to femur
Adult male (disarticulated)	Coldrum long barrow	Cut marks to innominate
Adult (disarticulated)	Coldrum long barrow	Cut marks to innominate

Table 29: Evidence for violent trauma collected incidentally during this research

In the south-east region, of the instances of violent trauma recorded (Table 29), at causewayed enclosures there are similar proportions of male and female victims while at long barrows there are twice as many male victims; there are no immature victims listed. It has been argued that warfare from the Early Neolithic onwards, although largely a male activity, involved both sexes (Thorpe, 2006:158). A recent study of isotopic evidence at Hambledon Hill causewayed enclosure in Dorset found that the highest strontium ratios came from adult males (Neil *et al*., 2018), who were felt by the excavators to have died during conflict (Mercer and Healy, 2008). The childhood diet of at least one adult male individual, who had an arrowhead amongst his ribs, is indicative of origins in the region of Somerset, Devon and Cornwall, where analysis of artefacts found at the enclosure indicate they were imported from, rather than origins from within the viewshed of Hambledon Hill, which is the population catchment area argued for by the excavators and mostly supported by the isotope data for the burial assemblage (Neil *et al.*, 2018).

In the current study, when the recorded evidence for violent trauma in south-east England is split into the western and eastern halves of the region, there are equal numbers of individuals affected in both areas with an equal split of male and female victims in the east, but a higher proportion of males affected in the west. Of the female victims in the region as a whole, most injuries are to the crania, including one possible case of decapitation, along with one case of upper limb injury and one embedded arrowhead; in the males there is more variety in the body parts affected, ranging from crania (including one possible decapitation) to femorae and innominate bones, along with embedded arrowheads. Overall, however, this small assemblage does not appear to indicate any great disparity between the sexes when it comes to violence.

In summary, this chapter has discussed the evidence for Early Neolithic mortuary practice in south-east England and has found that there are multiple lines of enquiry, some of which reveal glimpses of differential treatment on the grounds of age or sex. These are observable in the palaeodemographic make-up of the burial population, the locations where people were buried, the positions they were arranged in, the directions they pointed or faced, and the grave goods that accompanied them. The following chapter highlights the salient aspects of this study and, in so doing, seeks to characterise mortuary practice in south-east England during the Early Neolithic period from a demographic perspective and, looking forward, to ways our knowledge in this area can be further developed.

CHAPTER 7 - CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

This thesis has discussed the evidence for burial practices in the Early Neolithic period in south-east England through a demographic lens, considering burial locations, positions, orientations and grave goods. The latter three categories necessarily focus on the smaller, articulated burial assemblage which nonetheless provides important glimpses into mortuary behaviour during this time. To summarise the evidence for burial practice in this period as a whole, analysis must be made of articulated and disarticulated/fragmentary burial deposits both separately and conjointly.

In this study, most of the articulated burials in the archaeothanatological sample group have been interpreted by the author as having probably been interred in original voids, although restricted by shrouding, clothing or binding, and likely visible to a greater or lesser extent until subsequent deliberate or gradual infilling occurred, effectively sealing off these deceased from the living. If these individuals' burials were deviant from the Early Neolithic norm, as has been suggested in this thesis, it could be argued they were contained in their various ways to protect the living and perhaps to act as a warning against certain behaviour, practices or prejudices. Furthermore, this could be extended to the disarticulated remains which may have been used as a method of containing something to be feared or avoided. Such containment could have been a way of dealing with necrophobia itself, by using the bodily remains of individuals subjected to particular types of death to effectively provide a barrier between them and the living, be it in the form of restriction around the body itself, a single grave beneath or surrounded by restrictive geological material, or a communal one, similarly contained by a box or a mound, or both, constructed from wood or earth or stone. Although the precise measures may vary, the overarching theme may be of containment for the benefit of the living rather than memorialisation in respect of the dead. It could signify measures taken to deal with fear of something these individuals represented in life.

Both disarticulated and articulated mortuary rites could therefore have been the Early Neolithic methodology for addressing fear of what Fowler describes as 'difficult lives' and 'difficult deaths' arising from such factors as premature or violent death, witchcraft, shamanism and hierarchy (Fowler, 2010:15), containing dangerous spirits or using the souls of the dead to affect change for the living at times of social unrest (Cummings, 2017:137).

These individuals or their spirits could all have held some form of power over people in life, connected to their cosmological fears, and by containing these individuals in death, communities could assert control over their fears.

A general interpretation of motivation amid such diversity in burial locations and practices is difficult to arrive at but can perhaps be explained by a combination of local or regional customs and a pragmatic approach to utilising the materials available. So, against an overriding concern with containing the difficult dead, local communities would have developed their own beliefs and rites to deal with the deaths of these individuals, utilising the landscape in which they lived and its resources. These beliefs may have revolved around dealing reactively with those who died naturally but 'badly' and, in other cases, those who had life taken from them, by use of ritualised sacrifice, for instance.

As this research has focussed on demographic factors, it is pertinent to consider how the breakdown of the burials in this dataset by age and sex aligns with this broad interpretation of the possible motivations behind mortuary practices in the Early Neolithic in south-east England. Overall the variety observed in burial locations used for this containment is reflected in the different demographic groupings of the deceased, but nonetheless this research has found some indications of practices that seem to apply to particular demographic groups. There is around a 3:2 ratio of male to female burials across the study group and a ratio of 4:1 for adults to children. This predominance of males and adults aligns with previous research and indicates a general trend across southern England, however, when the data for the south-east is considered in more depth, although long barrows are largely a male domain, causewayed enclosures appear to be more egalitarian in their burial evidence, perhaps reflecting a function equally applicable to both sexes, however it was not necessarily the case that even individuals whose remains were apparently placed with care in ditches at these enigmatic sites were being memorialised in a positive or respectful way; they may have been societal outcasts subjected to differential treatment.

Average life expectancy for this Early Neolithic population indicates that people generally lived into their 40s, which is not particularly surprising for a prehistoric society compared to a present-day expectancy of reaching the late-70s/early-80s. However, there could be merit in further research into the application of Cave and Oxenham (2016)'s methodology for identifying the 'invisible elderly' to Neolithic skeletal remains. If this was workable despite the limitations of Neolithic skeletal assemblages, it could potentially elucidate the presence of elderly people in Neolithic society, rather than grouping them anonymously under the umbrella '45+ years' age category, giving insights into the role and view of elderly people in society at this time, ultimately perhaps, enabling comparison with other periods.

Possible differences are indicated between the western and the eastern sides of the south-east region which may warrant wider consideration. Nearly all of the long barrows containing human remains dated to the Early Neolithic are located on the western side of the region, causewayed enclosures with burials are fairly evenly spread across the region although are lacking in Hampshire on the western side, and non-monumental burials are predominantly concentrated across the northern section of the region but are currently absent from the southern-most counties of East and West Sussex with one exception in neighbouring Hampshire. In the west of the region, burials at long barrows are predominantly male individuals whereas in the east there is a more equal split between the sexes; while this pattern is reversed for non-monumental burials albeit on a smaller scale. Whereas in Wessex there were more male burials at both long barrows and causewayed enclosures (Thorpe, 1984), in the south-east region of this study causewayed enclosures appear to be more egalitarian in this respect, suggesting a differential view or role of women that may bear wider scrutiny; this is further supported by the tendency for female non-monumental burials to be articulated while males are equally articulated and disarticulated (compare Schulting, 2009). All of this is, of course, based on what has been found, not necessarily what is there, and additions to the record will continue to inform these patterns. On the basis of this research, however, it could be argued that there are regional differences resulting from the temporal spread of the Early Neolithic, which differs from the more traditional ideas of variation in the region between the north and south or topographically between high ground and low ground. Detailed studies of the kind undertaken in this thesis might well reveal further regional patterning.

Temporally, it appears that these potentially unusual burials of the Early Neolithic archaeological record largely follow the generally understood chronology of monument building, with mortuary-specific long barrows containing some of the earliest burial deposits in the region. The two early non-monumental burials, however, provide an interesting twist to mortuary practice for the era, suggesting an unusual burial rite for these individuals, as well as for those buried at non-monumental locations in subsequent centuries. That burials at causewayed enclosures align with the peak construction period for these monuments implies a strong connection with the activities taking place at these places during the 37th to 34th centuries BC (Whittle *et al.* (2011). The presence of burials at oval and round barrows from early in the burial sequence for the Early Neolithic period and continuing into the Middle Neolithic demonstrates the difficulty of relying too heavily on monument typology to characterise the mortuary practice of the time or its temporality.

This research has used archaeothanatological techniques to revisit the recorded burial positions of a sample of burials from the database and has synthesised the burial position descriptors and evidence of joint articulations during decomposition, based on the 'flexed' position of femorae to spinal column being normative for Early Neolithic articulated burials. Variables are restricted to the degree of flexion and whether the individual is judged to have been buried on their left or right side or their back or seated. Analysis of the effects of decomposition of the corpse has enabled further interpretative detail to be arrived at regarding supportive structures within graves, such as head rests, clothing, shrouding and coverings of organic material that may not have survived in the archaeological record. These interpretations can add detail to our understanding of burial practice and the possible motivations behind it. It would seem worthwhile to continue to extend such analysis further afield to scrutinise previous conclusions about burial positions and seek to create a more consistent and accurate record of what is undeniably a time of diversity. It is equally important, however, to be aware of the pitfalls of non-uniformity that can arise from taphonomic factors rather than differential treatment (e.g. Ortiz *et al.*, 2013): there may have been more similarity than is initially apparent. Further investigation of potential cases of mummification would also seem worthwhile now that a Late Neolithic instance has been identified (Allen *et al.*, 2016) and a methodology has been devised, with tightly flexed limbs being one of the identified initial features to indicate further investigation (Parker Pearson *et al*., 2005; Booth *et a*l., 2015).

This research has found some patterns in burial orientations, such as a tendency to orientating females north-to-south, on either side, facing east or west, while males and children are regularly orientated south-to-north, on the right, facing east. In looking for overarching explanations, it could be argued that burials orientated with the sunset (adults generally) represented an end of life, while those orientated to the sunrise (often females and nearly always children) represented a beginning of life. These could perhaps have been influenced by the type and cause of death of the individuals and their stage of life. This could be extended to present a case for delayed burial to fit with celestial alignments, for instance male alignments seem generally to coincide with the winter sunrise and sunset. Another possibility, given the known tendency to variety in Early Neolithic burial practice, is that burials were aligned with local or regional features in the landscape, as previously suggested by Rahtz (1978), such as monuments or other burials. Widening the scope of this analysis could provide more insight into these potential patterns.

Grave goods are limited in their presence in the burial record for this period and are most commonly found with female individuals at causewayed enclosures, and with males at long barrows and non-monumental locations. Certain types of artefact seem worthy of further consideration, particularly the presence of fossilised echinoids and decorated chalk which are only found with females and infants in this dataset. Further enquiry could explore whether this is localised practice or related to a more widespread belief system as the cases of echinoids in burials elsewhere suggest, and whether the inclusion of such objects may reflect memorialisation or protection and whether this is for the benefit of the living or the dead, or both. Other artefacts, such as arrowheads, would appear to warrant re-evaluation on a larger scale in view of those recently identified as embedded during violent events as opposed to being placed with individuals as grave goods *per se*. These issues may well be addressed by the current research into *Grave goods: objects and death in later prehistoric Britain* (Garrow *et al.*, forthcoming).

The potential benefits of pathological analysis have been highlighted in recent years following the reassessment of old archives. Although the current research did not explicitly aim to provide an analysis of pathological evidence from the dataset, that which was noted has highlighted some interesting features and avenues for further research in the areas of congenital abnormalities, musculoskeletal stress markers and trauma which could be useful in identifying demographic patterns (e.g. Wysocki *et al*., 2013).

In common with other recent studies, this research has found that archive reassessment can play an important part in furthering understanding of Early Neolithic burial practice. Building on this, a number of specific burials in the database would warrant further exploration, for example the human remains from the two Hampshire long barrows at Barton Stacey and Nutbane would benefit from radiocarbon dating and DNA analysis, subject to suitable samples being available. DNA analysis of the Park Farm burials would be an important adjunct to the direct dating that has already taken place and in all three cases strontium isotope analysis could be beneficial to reveal data on the origins of the individuals. In addition to the radiocarbon dating of the Cherry Garden Hill tumulus skeleton to the Early Bronze Age, which clearly changes the Neolithic burial record in this case (Cansfield and Thorpe, forthcoming), under the same research project, direct dating of the Whyteleafe skeleton is now underway and a request to sample the Pangbourne skeleton is currently under consideration. Finally, further work on piecing together the whereabouts of the human remains from Cissbury flint mines could expand on the data arrived at during the course of the current research and laboratory analysis recently undertaken on the Shaft 27 skeleton (Teather, forthcoming).

Overall, the evidence for mortuary practice in the Early Neolithic period seems disparate and varied, partly due to the vagaries of the archaeological record but also due to its very nature. However, this research has found that by taking a fresh look at the data, revisiting archives and synthesising the evidence using techniques such as archaeothanatological analysis, looking in detail at multiple aspects, there are some patterns of behaviour evident that warrant wider exploration. Some elements of demographic differentiation are indicated and it seems likely that this could reflect a societal ethos. Crucially, however, this may not have been as strong as those which exist today and may well have been very different in terms of how genders were viewed and experienced (Robb and Harris, 2018), with different social identities applying in different situations (Bender, 1988).

Furthermore, it may be that at the time of rapid change that the Early Neolithic period is now understood to have been (Whittle *et al*., 2011), a new gender divergence was introduced, along with the adoption of new practices, which had not previously been apparent (Dyble et al., 2015) and the burial record may reflect this on some level. Clues to this emanate both from monument type, with nearly all the earliest burials at causewayed enclosures in the south-east being female, for example, and geographically, with demonstrable equality at Coldrum long barrow in the North Downs in the east, as opposed to male dominance in the burial assemblages at Wayland's Smithy and Ascott-under-Wychwood in the Wessex Downs.

As proposed above, the archaeological record for this time may largely chronicle the deviant burial practice of the time, focussed on the 'difficult' living and dead (Fowler, 2010) and within this may be patterns of treatment that relate to views of different demographic groups based on belief systems related to their physical being or their behaviour in life. Such concerns may be caught up in cultural beliefs and worldviews that pervaded during the seven centuries of the Early Neolithic period, acculturated and disseminated by incomers from continental Europe (Whittle *et al.*, 2011) or with earlier roots in the preceding Mesolithic period. Within this, however, it seems probable from observation of the minutiae of burial practice, that in the midst of the rapid changes of the time, social groups enacted local interpretations of these practices, based around customs passed down through generations, utilising the resources that were available to them in their surroundings and which may have held importance.

Interpretation of archaeological evidence perhaps focuses too readily on the pursuit of identifying patterns and the creation of generalisations to explain the unknown, arguably in a similar way to the development of belief systems in prehistory: trying to make sense of the incomprehensible. There certainly seems to be merit in scrutinising apparent patterns of mortuary behaviour but it is important to accept the limitations of this and to be cautious in interpretation. Although some larger scale generalisation is plausible chronologically, the most convincing arguments seem to stem from a more localised perspective. Therefore, this research, which sought to investigate Early Neolithic mortuary practice demographically across time and space in south-east England, concludes that while both temporal and locational factors should be considered, it is the latter that probably hold the key to better understanding how adults and children, women and men were viewed in life and death.

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APPENDIX 1 – BURIALS DATABASE

(appended as a separate document)

APPENDIX 2: BREAKDOWN OF BURIAL DATA BY COUNTY AND THE REGION AS A WHOLE

Demographic data

EAST SUSSEX		**Articulated no.**	**Articulated %**	**Disarticulated no.**	**Disarticulated %**	**COMBINED no.**	**COMBINED %**
	Male	2	33	2	18	4	23
	Female	2	33	1	9	3	18
	Indeterminate	2	33	8	73	10	59
	Adult	4	67	9	82	13	76
	Juvenile	0	0	1	9	1	6
	Infant	2	33	1	9	3	18
	Total individuals	**6**		**11**		**17**	
WEST SUSSEX		**Articulated no.**	**Articulated %**	**Disarticulated no.**	**Disarticulated %**	**COMBINED no.**	**COMBINED %**
	Male	2	40	1	14	3	25
	Female	3	60	0	0	3	25
	Indeterminate	0	0	6	86	6	50
	Adult	5	100	6	86	11	92
	Juvenile	0	0	1	14	1	8
	Infant	0	0	0	0	0	0
	Total individuals	**5**		**7**		**12**	
HAMPSHIRE		**Articulated no.**	**Articulated %**	**Disarticulated no.**	**Disarticulated %**	**COMBINED no.**	**COMBINED %**
	Male	3	60	1	17	4	36
	Female	0	0	2	33	2	18
	Indeterminate	2	40	3	50	5	45
	Adult	3	60	4	67	7	64
	Juvenile	1	20	2	33	3	27
	Infant	1	20	0	0	1	9
	Total individuals n.	**5**		**6**		**11**	

SURREY		Articulated no.	Articulated %	Disarticulated no.	Disarticulated %	COMBINED no.	COMBINED %
	Male	0	0	2	22	2	22
	Female	2	100	3	33	5	45
	Indeterminate	0	0	4	44	4	36
	Adult	2	100	8	89	10	91
	Juvenile	0	0	0	0	0	0
	Infant	0	0	1	11	1	9
	Total individuals	**2**		**9**		**11**	
GREATER LONDON		**Articulated no.**	**Articulated %**	**Disarticulated no.**	**Disarticulated %**	**COMBINED no.**	**COMBINED %**
	Male	0	0	0	0	0	0
	Female	1	100	1	100	2	100
	Indeterminate	0	0	0	0	0	0
	Adult	1	100	1	100	2	100
	Juvenile	0	0	0	0	0	0
	Infant	0	0	0	0	0	0
	Total individuals	**1**		**1**		**2**	
KENT		**Articulated no.**	**Articulated %**	**Disarticulated no.**	**Disarticulated %**	**COMBINED no.**	**COMBINED %**
	Male	2	100	5	25	7	32
	Female	0	0	5	25	5	22
	Indeterminate	0	0	10	50	10	45
	Adult	2	100	13	65	15	68
	Juvenile	0	0	0	0	0	0
	Infant	0	0	7	35	7	32
	Total individuals	**2**		**20**		**22**	

BERKSHIRE		Articulated no.	Articulated %	Disarticulated no.	Disarticulated %	COMBINED no.	COMBINED %
	Male	1	20	4	57	5	42
	Female	2	40	1	14	3	25
	Indeterminate	2	40	2	29	4	33
	Adult	3	60	7	100	10	83
	Juvenile	2	40	0	0	2	17
	Infant	0	0	0	0	0	0
	Total individuals	**5**		**7**		**12**	
OXFORDSHIRE		**Articulated no.**	**Articulated %**	**Disarticulated no.**	**Disarticulated %**	**COMBINED no.**	**COMBINED %**
	Male	9	69	10	29	19	40
	Female	2	15	6	17	8	17
	Indeterminate	2	15	19	54	21	43
	Adult	11	84	28	77	38	79
	Juvenile	1	8	4	14	6	13
	Infant	1	8	3	9	4	8
	Total individuals	**13**		**35**		**48**	
BUCKINGHAMSHIRE		**Articulated no.**	**Articulated %**	**Disarticulated no.**	**Disarticulated %**	**COMBINED no.**	**COMBINED %**
	Male	0	0	1	100	1	100
	Female	0	0	0	0	0	0
	Indeterminate	0	0	0	0	0	0
	Adult	0	0	1	100	1	100
	Juvenile	0	0	0	0	0	0
	Infant	0	0	0	0	0	0
	Total individuals	**0**		**1**		**1**	

OVERALL		Articulated no.	Articulated %	Disarticulated no.	Disarticulated %	COMBINED no.	COMBINED %
	Male	19	48	26	27	45	33
	Female	12	31	19	19	31	23
	Indeterminate	8	21	52	54	60	44
	Adult	31	80	77	79	108	79
	Juvenile	4	10	8	8	12	8
	Infant	4	10	12	12	16	12
	Total individuals n.	**39**		**97**		**136**	

HAMPSHIRE

Burial location – articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	3	3	0	0	0	0	3	0	0	0	0
Female	0	0	0	0	0	0	0	0	0	0	0
Indeterminate	2	1	0	0	0	1	1	0	0	0	1
Adult	3	3	0	0	0	0	3	0	0	0	0
Juvenile	1	1	0	0	0	0	1	0	0	0	0
Infant	1	0	0	0	0	1	0	0	0	0	1

HAMPSHIRE

Burial location – disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	1	1	0	0	0	0	1	0	0	0	0
Female	2	2	0	0	0	0	2	0	0	0	0
Indeterminate	3	3	0	0	0	0	1	0	2	0	0
Adult	4	4	0	0	0	0	3	0	1	0	0
Juvenile	2	2	0	0	0	0	1	0	1	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0

EAST SUSSEX

Burial location - articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	2	0	0	2	0	0	0	2	0	0	0
Female	2	0	0	2	0	0	0	2	0	0	0
Indeterminate	2	0	0	2	0	0	0	2	0	0	0

Adult	4	0	0	4	0	0	0	4	0	0	0
Juvenile	0	0	0	0	0	0	0	0	0	0	0
Infant	2	0	0	2	0	0	0	2	0	0	0

EAST SUSSEX

Burial location - disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	2	0	0	2	0	0	0	2	0	0	0
Female	1	0	0	1	0	0	0	1	0	0	0
Indeterminate	8	0	0	8	0	0	0	8	0	0	0

Adult	9	0	0	9	0	0	0	9	0	0	0
Juvenile	1	0	0	1	0	0	0	1	0	0	0
Infant	1	0	0	1	0	0	0	1	0	0	0

WEST SUSSEX

Burial location - articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	2	0	0	0	2	0	1	0	0	1	0
Female	3	0	0	0	3	0	1	0	0	2	0
Indeterminate	0	0	0	0	0	0	0	0	0	0	0

Adult	5	0	0	0	5	0	2	0	0	3	0
Juvenile	0	0	0	0	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0

WEST SUSSEX

Burial location - disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	1	0	1	0	0	0	0	1	0	0	0
Female	0	0	0	0	0	0	0	0	0	0	0
Indeterminate	6	0	2	1	3	0	0	3	0	3	0

Adult	6	0	3	1	2	0	0	4	0	2	0
Juvenile	1	0	0	0	1	0	0	0	0	1	0
Infant	0	0	0	0	0	0	0	0	0	0	0

SURREY

Burial location - articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	0	0	0	0	0	0	0	0	0	0	0
Female	2	0	0	2	0	0	0	2	0	0	0
Indeterminate	0	0	0	0	0	0	0	0	0	0	0

Adult	2	0	0	2	0	0	0	2	0	0	0
Juvenile	0	0	0	0	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0

SURREY

Burial location - disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	2	0	0	2	0	0	0	2	0	0	0
Female	3	0	0	3	0	0	0	3	0	0	0
Indeterminate	4	0	0	4	0	0	0	4	0	0	0

Adult	8	0	0	8	0	0	0	8	0	0	0
Juvenile	0	0	0	0	0	0	0	0	0	0	0
Infant	1	0	0	1	0	0	0	1	0	0	0

KENT

Burial location - articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	2	0	0	0	0	2	0	0	0	0	2
Female	0	0	0	0	0	0	0	0	0	0	0
Indeterminate	0	0	0	0	0	0	0	0	0	0	0
Adult	2	0	0	0	0	2	0	0	0	0	2
Juvenile	0	0	0	0	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0

KENT

Burial location - disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	5	5	0	0	0	0	5	0	0	0	0
Female	5	4	0	1	0	0	4	1	0	0	0
Indeterminate	10	8	0	1	0	1	8	1	0	0	1
Adult	13	11	0	1	0	1	11	1	0	0	1
Juvenile	0	0	0	0	0	0	0	0	0	0	0
Infant	7	6	0	1	0	0	6	1	0	0	0

BERKSHIRE

Burial location - articulated

	n.	Long barrow	Oval/ round barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	1	0	1	0	0	0	1	0	0	0	0
Female	2	0	1	0	0	1	1	0	0	0	1
Indeterminate	2	0	1	1	0	0	1	1	0	0	0
Adult	3	0	2	0	0	1	2	0	0	0	1
Juvenile	2	0	1	1	0	0	1	1	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0

BERKSHIRE

Burial location - disarticulated

	n.	Long barrow	Oval/ round barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave	River
Male	4	0	0	1	0	3	0	2	2	0	0	0
Female	1	1	0	0	0	0	1	0	0	0	0	0
Indeterminate	2	1	0	0	0	1	1	0	1	0	0	0
Adult	7	2	0	1	0	4	2	2	3	0	0	0
Juvenile	0	0	0	0	0	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0	0

BUCKINGHAMSHIRE

Burial location - articulated

	n.	Long barrow	Oval/ round barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	0	0	0	0	0	0	0	0	0	0	0
Female	0	0	0	0	0	0	0	0	0	0	0
Indeterminate	0	0	0	0	0	0	0	0	0	0	0

Adult	0	0	0	0	0	0	0	0	0	0	0
Juvenile	0	0	0	0	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0

BUCKINGHAMSHIRE

Burial location - disarticulated

	n.	Long barrow	Oval/ round barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	1	0	1	0	0	0	1	0	0	0	0
Female	0	0	0	0	0	0	0	0	0	0	0
Indeterminate	0	0	0	0	0	0	0	0	0	0	0

Adult	1	0	1	0	0	0	1	0	0	0	0
Juvenile	0	0	0	0	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0

GREATER LONDON

Burial location - articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	0	0	0	0	0	0	0	0	0	0	0
Female	1	0	0	0	0	1	0	0	0	0	1
Indeterminate	0	0	0	0	0	0	0	0	0	0	0
Adult	1	0	0	0	0	1	0	0	0	0	1
Juvenile	0	0	0	0	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0

GREATER LONDON

Burial location - disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave	River
Male	0	0	0	0	0	0	0	0	0	0	0	0
Female	1	0	0	0	0	1	0	0	0	0	0	1
Indeterminate	0	0	0	0	0	0	0	0	0	0	0	0
Adult	1	0	0	0	0	1	0	0	0	0	0	1
Juvenile	0	0	0	0	0	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0	0

OXFORDSHIRE

Burial location - articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	9	7	2	0	0	0	8	0	0	0	1
Female	2	1	0	0	0	1	1	0	0	0	1
Indeterminate	2	1	0	0	0	1	1	0	0	0	1
Adult	11	8	2	0	0	1	9	0	0	0	2
Juvenile	1	1	0	0	0	0	1	0	0	0	0
Infant	1	0	0	0	0	1	0	0	0	0	1

OXFORDSHIRE

Burial location - disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	10	10	0	0	0	0	10	0	0	0	0
Female	6	5	0	0	0	1	5	0	1	0	0
Indeterminate	19	16	0	3	0	0	16	3	0	0	0
Adult	28	27	0	0	0	1	27	0	1	0	0
Juvenile	4	1	0	3	0	0	1	3	0	0	0
Infant	3	3	0	0	0	0	3	0	0	0	0

OVERALL

Burial location - articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	19	10	2	2	2	3	13	2	0	1	3
Female	12	1	1	4	3	3	3	4	0	2	3
Indeterminate	8	1	1	3	0	3	3	3	0	0	2
Adult	31	11	3	6	5	6	16	6	0	3	6
Juvenile	4	1	1	1	0	1	3	1	0	0	0
Infant	4	0	0	2	0	2	0	2	0	0	2

OVERALL

Burial location - disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave	River
Male	26	16	2	5	0	3	17	7	2	0	0	0
Female	19	12	0	5	0	2	12	5	1	0	0	1
Indeterminate	52	28	2	17	3	2	26	19	3	3	1	0
Adult	77	44	4	20	2	7	44	24	5	2	1	1
Juvenile	8	3	0	4	1	0	2	4	1	1	0	0
Infant	12	9	0	3	0	0	9	3	0	0	0	0

Breakdown by site type

Long barrow = barrow (inc cairn)/ pit

Oval barrow/round barrow = barrow/pit

Causewayed enclosure = ditch/pit

Flint mine = shaft/barrow

Non-monumental = pit/grave/river

Burial positions and orientations

HAMPSHIRE

Burial position

	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Male	3	3	0	0	0	0
Female	0	0	0	0	0	0
Indeterminate	2	2	0	0	0	0
	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Adult	3	3	0	0	0	0
Juvenile	1	1	0	0	0	0
Infant	1	1	0	0	0	0

Burial orientation

	n.	E-W	W-E	N-S	S-N	NW-SE	SE-NW
Male	3	2	0	0	1	0	0
Female	0	0	0	0	0	0	0
Indeterminate	2	1	0	0	1	0	0
Adult	3	2	0	0	1	0	0
Juvenile	1	0	0	0	1	0	0
Infant	1	1	0	0	0	0	0

	n.	Lying on left	Lying on Right	n.	Facing North	Facing South	Facing East	Facing West	Facing NW	Facing NE	Facing SW
Male	3	2	1	3	0	2	1	0	0	0	0
Female	0	0	0	0	0	0	0	0	0	0	0
Indeterminate	2	0	2	2	1	0	1	0	0	0	0
Adult	3	2	1	3	0	2	1	0	0	0	0
Juvenile	1	0	1	1	0	0	1	0	0	0	0
Infant	1	0	1	1	1	0	0	0	0	0	0

EAST SUSSEX

Burial position

	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Male	2	1	1	0	0	0
Female	2	0	0	0	2	0
Indeterminate	1	0	0	0	0	1
	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Adult	4	1	1	0	2	0
Juvenile	0	0	0	0	0	0
Infant	1	0	0	0	0	1

Burial orientation

	n.	E-W	W-E	N-S	S-N	NW-SE	SE-NW
Male	2	1	0	0	1	0	0
Female	2	0	0	0	1	1	0
Indeterminate	1	0	0	0	1	0	0
Adult	4	1	0	0	2	1	0
Juvenile	0	0	0	0	0	0	0
Infant	1	0	0	0	1	0	0

	n.	Lying on left	Lying on Right	n.	Facing North	Facing South	Facing East	Facing West	Facing NW	Facing NE	Facing SW
Male	2	0	2	2	1	0	1	0	0	0	0
Female	2	1	1	2	0	0	1	0	0	1	0
Indeterminate	1	0	1	1	0	0	1	0	0	0	0
Adult	4	1	3	4	1	0	2	0	0	1	0
Juvenile	0	0	0	0	0	0	0	0	0	0	0
Infant	1	0	1	1	0	0	1	0	0	0	0

WEST SUSSEX

Burial position

	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Male	2	0	2	0	0	0
Female	3	0	1	2	0	0
Indeterminate	0	0	0	0	0	0
	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Adult	5	0	3	2	0	0
Juvenile	0	0	0	0	0	0
Infant	0	0	0	0	0	0

Burial orientation

	n.	E-W	W-E	N-S	S-N	NW-SE	SE-NW
Male	2	0	0	1	1	0	0
Female	3	0	0	1	1	0	1
Indeterminate	0	0	0	0	0	0	0
Adult	5	0	0	2	2	0	1
Juvenile	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0

	n.	Lying on left	Lying on Right	n.	Facing North	Facing South	Facing East	Facing West	Facing NW	Facing NE	Facing SW
Male	2	1	1	2	0	0	2	0	0	0	0
Female	3	3	0	3	0	0	1	1	0	0	1
Indeterminate	0	0	0	0	0	0	0	0	0	0	0
Adult	5	4	1	5	0	0	3	1	0	0	1
Juvenile	0	0	0	0	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0

SURREY

Burial position

	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Male	0	0	0	0	0	0
Female	2	1	0	1	0	0
Indeterminate	1	0	1	0	0	0
	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Adult	3	1	1	1	0	0
Juvenile	0	0	0	0	0	0
Infant	0	0	0	0	0	0

Burial orientation

	n.	E-W	W-E	N-S	S-N	NW-SE	SE-NW
Male	0	0	0	0	0	0	0
Female	2	0	0	1	0	1	0
Indeterminate	1	1	0	0	0	0	0
Adult	3	1	0	1	0	1	0
Juvenile	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0

	n.	Lying on left	Lying on Right	n.	Facing North	Facing South	Facing East	Facing West	Facing NW	Facing NE	Facing SW
Male	0	0	0	0	0	0	0	0	0	0	0
Female	2	1	1	2	0	0	0	1	0	1	0
Indeterminate	0	0	0	0	0	0	0	0	0	0	0
Adult	2	1	1	2	0	0	0	1	0	1	0
Juvenile	0	0	0	0	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0

KENT

Burial position

	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Male	2	2	0	0	0	0
Female	0	0	0	0	0	0
Indeterminate	0	0	0	0	0	0
	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Adult	2	2	0	0	0	0
Juvenile	0	0	0	0	0	0
Infant	0	0	0	0	0	0

Burial orientation

	n.	E-W	W-E	N-S	S-N	NW-SE	SE-NW	NE-SW
Male	2	1	0	0	0	0	0	1
Female	0	0	0	0	0	0	0	0
Indeterminate	0	0	0	0	0	0	0	1
Adult	2	1	0	0	0	0	0	0
Juvenile	0	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0	0

	n.	Lying on left	Lying on Right	n.	Facing North	Facing South	Facing East	Facing West	Facing NW	Facing NE	Facing SW	Facing SE
Male	2	1	1	2	1	0	0	0	0	0	0	1
Female	0	0	0	0	0	0	0	0	0	0	0	0
Indeterminate	0	0	0	0	0	0	0	0	0	0	0	0
Adult	2	1	1	2	1	0	0	0	0	0	0	1
Juvenile	0	0	0	0	0	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0	0

BERKSHIRE

Burial position

	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Male	1	1	0	0	0	0
Female	1	1	0	0	0	0
Indeterminate	2	1	0	0	1	0
	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Adult	2	2	0	0	0	0
Juvenile	2	1	0	0	1	0
Infant	0	0	0	0	0	0

Burial orientation

	n.	E-W	W-E	N-S	S-N	NW-SE	SE-NW	SW-NE
Male	1	0	0	0	0	0	0	1
Female	1	0	0	0	0	0	0	1
Indeterminate	2	0	0	1	0	0	0	1
Adult	2	0	0	0	0	0	0	2
Juvenile	2	0	0	1	0	0	0	1
Infant	0	0	0	0	0	0	0	0

	n.	Lying on left	Lying on Right	n.	Facing North	Facing South	Facing East	Facing West	Facing NW	Facing NE	Facing SW	Facing SE
Male	1	0	1	1	0	0	0	0	0	0	0	1
Female	1	0	1	1	0	0	0	0	0	0	0	1
Indeterminate	2	1	1	2	0	0	0	1	1	0	0	0
Adult	2	0	2	2	0	0	0	0	0	0	0	2
Juvenile	2	1	1	2	0	0	0	1	1	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0	0

GREATER LONDON

Burial position

	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Male	0	0	0	0	0	0
Female	1	1	0	0	0	0
Indeterminate	0	0	0	0	0	0
	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Adult	1	1	0	0	0	0
Juvenile	0	0	0	0	0	0
Infant	0	0	0	0	0	0

Burial orientation

	n.	E-W	W-E	N-S	S-N	NW-SE	SE-NW
Male	0	0	0	0	0	0	0
Female	1	1	0	0	0	0	0
Indeterminate	0	0	0	0	0	0	0
Adult	1	1	0	0	0	0	0
Juvenile	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0

	n.	Lying on left	Lying on Right	n.	Facing North	Facing South	Facing East	Facing West	Facing NW	Facing NE	Facing SW
Male	0	0	0	0	0	0	0	0	0	0	0
Female	1	1	0	1	0	1	0	0	0	0	0
Indeterminate	0	0	0	0	0	0	0	0	0	0	0
Adult	1	1	0	1	0	1	0	0	0	0	0
Juvenile	0	0	0	0	0	0	0	0	0	0	0
Infant	0	0	0	0	0	0	0	0	0	0	0

OXFORDSHIRE

Burial position

	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Male	7	6	0	1	0	0
Female	2	1	0	1	0	0
Indeterminate	2	1	0	1	0	0
	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Adult	9	7	0	2	0	0
Juvenile	0	0	0	0	0	0
Infant	2	1	0	1	0	0

Burial orientation

	n.	E-W	W-E	N-S	S-N	NW-SE	SE-NW	SW-NE
Male	8	0	1	0	5	0	1	1
Female	2	1	0	1	0	0	0	0
Indeterminate	3	0	1	0	2	0	0	0
Adult	11	1	1	1	6	0	1	1
Juvenile	0	0	0	0	0	0	0	0
Infant	2	0	1	0	1	0	0	0

	n.	Lying on left	Lying on Right	n.	Facing North	Facing South	Facing East	Facing West	Facing NW	Facing NE	Facing SW	Facing SE
Male	7	2	5	8	0	2	3	1	0	0	1	1
Female	2	0	2	2	1	0	0	1	0	0	0	0
Indeterminate	2	0	2	2	0	1	1	0	0	0	0	0
Adult	9	2	7	10	1	2	3	2	0	0	1	1
Juvenile	0	0	0	0	0	0	0	0	0	0	0	0
Infant	2	0	2	2	0	1	1	0	0	0	0	0

OVERALL

Burial position

	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Male	17	13	3	1	0	0
Female	12	4	2	4	2	0
Indeterminate	7	4	0	1	1	1
	n.	Crouched	Contracted	Flexed	Semi-prone	Curled-up
Adult	29	17	5	5	2	0
Juvenile	3	2	0	0	1	0
Infant	4	2	0	1	0	1

Burial orientation

	n.	E-W	W-E	N-S	S-N	NW-SE	SE-NW	SW-NE	NE-SW
Male	18	4	1	1	8	0	1	2	1
Female	11	2	0	3	2	2	1	1	0
Indeterminate	9	2	1	1	4	0	0	1	0
Adult	31	7	1	4	11	2	2	3	1
Juvenile	4	1	0	1	1	0	0	1	0
Infant	3	0	1	0	2	0	0	0	0

	n.	Lying on left	Lying on Right	n.	Facing North	Facing South	Facing East	Facing West	Facing NW	Facing NE	Facing SW	Facing SE
Male	17	6	11	18	2	4	6	1	0	0	2	3
Female	11	6	5	13	1	1	3	4	0	2	1	1
Indeterminate	7	1	6	6	1	0	3	1	1	0	0	0
Adult	28	12	16	31	3	5	9	5	0	2	3	4
Juvenile	3	1	2	3	0	0	1	1	1	0	0	0
Infant	4	0	4	3	1	0	2	0	0	0	0	0

__Grave goods__

HAMPSHIRE

Grave goods – articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	2	2 (bos metatarsals)					2				
Female	0										
Indeterminate	2	1 (bos metatarsal)				1 (flint flakes & blades, spalls, pottery sherds, large sarsen at feet)	1				1
Adult	2	2					2				
Child	2	1				1	1				1

HAMPSHIRE

Grave goods – disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	0										
Female	0										
Indeterminate	0										
Adult	0										
Child	0										

EAST SUSSEX

Grave goods – articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	2			1 (pottery sherds, land snails, mussel shells)	1 (leaf-shaped arrowhead, ovate implement, axes, wild board tusk, snails, ox teeth)		1	1			
Female	3			2 (1 with fossil echinoid; 1 with perforated chalk, 2 x fossil echinoids, partial ox radius)	1 (Incised chalk, snail shells, axe, ox, pig teeth)		1	2			
Indeterminate	1			1 (pottery sherds, incised chalk)				1			

Adult	5			3	2		2	4			
Child	1			1							

EAST SUSSEX

Grave goods – disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	0										
Female	0										
Indeterminate	0										

Adult	0										
Child	0										

WEST SUSSEX

Grave goods – articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	1				1 (oval flint implement, snail shells, fire-marked pebble)					1	
Female	2				2 (1 with 4 x chalk charms; 1 with leaf-shaped arrowhead, carinated bowl)					2	
Indeterminate	0									0	

Adult	3				3					3	
Child	0				0					0	

WEST SUSSEX

Grave goods – disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	0										
Female	0										
Indeterminate	1			1 (pottery, flint implements, animal bones: bos, sus, ovis/capra)							

Adult	1			1							
Child	0			0							

SURREY

Grave goods – articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Bar ro w	Ditch	Pit	Mineshaft	Grave
Male	0										
Female	1			1 (12 flint flakes, unusual rimsherd)							
Indeterminate	0										
Adult	1			1							
Child	0										

SURREY

Grave goods – disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	2			2 (worked flint, animal bones, cattle, sheep, goat, pig, pottery sherds)				2			
Female	2			2 (worked flint, animal bones, cattle, sheep, goat, pig, pottery sherds)				2			
Indeterminate	2			1 (with worked flint, animal bones, cattle, sheep, goat, pig, pottery sherds)		1 (axe, flint implements inc leaf-shaped arrowhead, animal bones)		2			1
Adult	6			5		1		6			1
Child	0			0		0					0

KENT

Grave goods – articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental
Male	2					2 (1 with burnt clay, oyster, mussel, pot crushed over body, flint flakes; 1 with chalk, burnt clay, oyster, mussel, pottery crushed over body; 1 with large amount of pottery)
Female	0					
Indeterminate	0					
Adult	2					2
Child	0					

Barrow	Ditch	Pit	Mineshaft	Grave
				2
				2

KENT

Grave goods – disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental
Male	0					
Female	0					
Indeterminate	0					

Barrow	Ditch	Pit	Mineshaft	Grave

Adult	0					
Child	0					

BERKSHIRE

Grave goods – articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	0						0				
Female	1					1 Pottery, red deer antler	0				1
Indeterminate	1		1 (bos molar & vole skull)				1				0
Adult	1					1	0				1
Child	1		1				1				0

BERKSHIRE

Grave goods – disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	2					1 (pottery, antler comb, saddle quern) 1 (pottery, animal bone, flint)	0	1	1		
Female	1	1 (near faunal remains)					1	0	0		

Indeterminate	2	1 (charcoal, pottery, animal bones)				1 (pottery, animal bone, worked flint)	1	1	0		
Adult	5	2				3	2	2	1		
Child	0	0				0	0		0		

BUCKINGHAMSHIRE

Grave goods – articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monume-ntal	Barrow	Ditch	Pit	Mineshaft	Grave
Male	0										
Female	0										
Indeterminate	0										
Adult	0										
Child	0										

BUCKINGHAMSHIRE

Grave goods – disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Gravel Pit	Mineshaft	Grave
Male	0										
Female											
Indeterminate	0										
Adult	0										
Child	0										

GREATER LONDON

Grave goods – articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental
Male	0					
Female	0					
Indeterminate	0					
Adult	0					
Child	0					

Barrow	Ditch	Pit	Mineshaft	Cist

GREATER LONDON

Grave goods – disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental
Male	0					0
Female	1					1 (pottery sherd, flint knife, flint flakes)
Indeterminate	0					0

Barrow	Ditch	Gravel Pit	Mineshaft	Grave
				1

Adult	1					1
Child	0					0

				1
				0

OXFORDSHIRE

Grave goods – articulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Pit	Mineshaft	Grave
Male	2		2 (1 with pig mandible, other animal bones; 1 with flint blades)				1				1
Female	0								0		
Indeterminate	1					1 (blade-like flint)			0		1
Adult	2		2	0			1				1
Child	1			0		1	0		0		1

OXFORDSHIRE

Grave goods – disarticulated

	n.	Long barrow	Oval barrow	Causewayed enclosure	Flint mine	Non-monumental	Barrow	Ditch	Gravel Pit	Mineshaft	Grave
Male	1	1 (leaf-shaped arrowheads)					1				
Female	1	1 (leaf-shaped arrowhead)					1				
Indeterminate	1	1 (fossil echinoid)					1				
Adult	3	3									
Child	0	0									

APPENDIX 3: SUMMARY OF RADIOCARBON DATES FOR HUMAN REMAINS IN THE DATABASE

Site	Site Type	Sex	Age	Skeletal element	Lab No	Radiocarbon age (BP)	^{14}C date range (95% confidence; cal BC)	δ^{13}C	Comments
HAMPSHIRE									
Nutbane	LB	M	25-35 yrs						
Nutbane	LB	M?	45+ yrs						
Nutbane	LB	?	12-13 yrs						
Nutbane	LB	M	25-35 yrs						
Nutbane	LB	?	?						
Nutbane	LB	?	?						
Barton Stacey	LB	F?							
Barton Stacey	LB	F?							
Barton Stacey	LB	M?							
Barton Stacey	LB	?							
Itchen Farm 2814	NM	?	4-6yrs		KIA-42095	5244 ± 36	4230-3970	-21.98 ± 0.29	
EAST SUSSEX									
Offham Burial 1	CE	M?	18-35 yrs	Femur Femur	OxA-14177 GrA-27322	4722 ± 32 4685 ±45	3630-3380 3630-3640	-20.5 -20.9	 Replicate
Offham	CE	?	35-45 yrs						
Offham	CE	?	Adult						
Offham	CE	?	30-35 yrs						
Offham	CE	?	Adult						
Offham	CE	?	Adult						
Whitehawk SKI (128)	CE	F	18-45 yrs	Rib	GrA-26971	4795 ± 40	3660-3380	-20.7	
Whitehawk SKII (129)	CE	F	18-30 yrs	Rib Rib	GrA-26977 OxA14063	4785 ± 40 4792 ± 33	3650-3380 3650-3520	-21.1 -20.6	 Replicate

Whitehawk SKIII (139)	CE	M	18-45 yrs	Mandible Mandible	GrA-26966 OxA-14061	4605 ±40 4739 ±36	3520-3120 3640-3380	-21.2 -20.3	Replicate
Whitehawk SKIV (140)	CE	?	7-12 yrs						
Whitehawk SKIIa (129a)	CE	?	<1 year						
Whitehawk	CE	M?	18-30 yrs						
Whitehawk	CE	M?	18-30 yrs						
Whitehawk	CE	?	7-12 yrs						
Whitehawk	CE	?	18-45 yrs						
Whitehawk	CE	F?	18-30 yrs						
Whitehawk	CE	?	13-17 yrs						
WEST SUSSEX									
Cissbury Shaft 27	FM	F	17-25 yrs	Skull	OxA-34470	4775 ±34	3640-3380		
Cissbury	FM	M	c.25 yrs						
Cissbury	FM	F	Adult						
North Marden	OB	M	45+ yrs	Charcoal	HAR-5544	4710 ±110	3710-3110		TPQ from cranium context
North Marden	OB	?	18+						
North Marden	OB	?	18+						
Bury Hill	OB	?	Adult						
Blackpatch	FM	?	Adult						Lost in WW2
Blackpatch	FM	M	Young adult						Lost in WW2
Blackpatch	FM	F	Young adult						Lost in WW2
Blackpatch	FM	?	Adult						
Blackpatch	FM	?	Juvenile?						
SURREY									
Staines	CE	F	35-45 yrs						
Staines	CE	M	17-25 yrs						
Staines	CE	?	Adult						

Staines	CE	F?	17+ yrs						
Staines	CE	F?	18-25 yrs						
Staines	CE	M	25-35 yrs						
Staines	CE	?	Infant						
Staines	CE	F?	adult						
Shepperton	CE	F?	30-40 yrs		OxA-4061	4645 ± 85	3640-3110		
Shepperton	CE	?	25-35 yrs						Not suitable for sampling
Whyteleafe	NM	?	Adult	tbc	tbc	tbc	tbc	tbc	tbc
KENT									
Nethercourt Farm	NM	M?	35-45						
Nethercourt Farm	NM	?	Young adult						
Monkton Minster A253	NM	M?	Elderly						Not suitable for sampling
Chalk Hill	CE	?	4-6 yrs						
Chalk Hill	CE	F?	16-30 yrs	Skull	UBA-14310	4687 ± 36	3630-3370	-21.7	
Coldrum	LB	M?	Adult	Femur	OxA-13749	4664 ± 30	3520-3370	-20.68	
Coldrum	LB	M?	Adult	Femur	OxA-13750	4670 ± 31	3620-3370	-20.82	
Coldrum	LB	M?	Adult	Inominate	OxA-13751	4639 ± 30	3960-3790	-20.79	
Coldrum	LB	M?	Adult	Skull	OxA-16040	5077 ± 38	3520-3360	-20.7	
Coldrum	LB	M?	Adult						
Coldrum	LB	F?	Adult						
Coldrum	LB	F?	Adult						
Coldrum	LB	F?	50+ yrs						
Coldrum	LB	F?	Adult						
Coldrum	LB	?	16-20 yrs?						
Coldrum	LB	?	16-20 yrs?						

Coldrum	LB	?	c.5 yrs						
Coldrum	LB	?	24-30 mth						
Coldrum	LB	?	Older child						
Coldrum	LB	?	Older child						
Coldrum	LB	?	Older child						
Coldrum	LB	?	Older child						
BERKSHIRE									
Farmhill, Pangbourne	NM	F?	45+ yrs?						Under discussion
Park Farm Burial 1	RB	?	c.16 yrs		HAR-3898	4800 ± 90	3760-3370		
Park Farm Burial 2	RB	F	25-35 yrs		HAR-3884	4780 ± 70	3700-3370		
Park Farm Burial 3	RB	M	25-35 yrs		HAR-3883	4870 ± 70	3900-3380		
Lambourn	LB	F?	Adult		OxA-7694	4915 ± 45	3790-3640	-20.6	
Lambourn	LB	?	Adult		OxA-7693	4955 ± 45	3930-3650	-20.0	
Hoveringham, Bray	NM	M	Adult						
Eton Rowing Lake	NM	M	45+ yrs	Skull	OxA-8820	4795 ± 50	3660-3380		
Eton Rowing Lake	NM	?	Adult						
Eton Rowing Lake	NM	M?	Adult						
[Berkshire]	Mon	F?	14-17 yrs						
[Berkshire]	Mon	M?	18-30 yrs						

BUCKINGHAMSHIRE									
Whiteleaf Hill	OB	M	45+ yrs	Skull	OxA-13567	4900 ± 33	3760-3640	-21.1	
GREATER LONDON									
Yabsley Street	NM	F?	Young adult	Oak	KIA-20157	5250 ± 28	4230-3975		
Battersea	NM	F?	25+ yrs	Skull	OxA-1199	4880 ± 80	3940-3380		
OXFORDSHIRE									
Ascott-under-Wychwood A1	LB	?	11 yrs ± 30 months	Tibia	OxA-13319	4984 ± 29	3925-3670	-20.7	
Ascott-under-Wychwood A2	LB	?	19-23 yrs	Ulna	GrA-25292 BM-1976R	4930 ±100	3960-3520	-21.9 -19.7	
Ascott-under-Wychwood A3	LB	M	Adult	Ulna	OxA-13320	4974 ± 29	3905-3660	-20.6	
Ascott-under-Wychwood B1	LB	?	7yrs ± 24 mths	Femur	OxA-13401	4765 ± 31	3640-3380	-20.3	
Ascott-under-Wychwood B2	LB	M?	19-24 yrs	Ulna	GrA-25304	4890 ± 40	3770-3640	-22.3	
Ascott-under-Wychwood B3	LB	?	25-35 yrs	Humerus	OxA-13402	4964 ± 21	3790-3670	-20.7	
Ascott-under-Wychwood B4	LB	?	36-45 yrs	Humerus	OxA-13402	4964 ± 21	3790-3670	-20.7	
Ascott-under-Wychwood B5	LB	?	46+ yrs	Humerus	OxA-13402	4964 ± 21	3790-3670	-20.7	
Ascott-under-Wychwood C	LB	?	35-45 yrs	Ulna	OxA-13403	4816 ± 31	3660-3520	-20.5	
Ascott-under-Wychwood C	LB	F	18+ yrs	Ulna	OxA-13403	4816 ± 31	3660-3520	-20.5	
Ascott-under-Wychwood C	LB	F	18+ yrs	Ulna	OxA-13403	4816 ± 31	3660-3520	-20.5	
Ascott-under-Wychwood C	LB	M	18+ yrs	Ulna	OxA-13403	4816 ± 31	3660-3520	-20.5	
Ascott-under-Wychwood C	LB	M	18+ yrs	Ulna	OxA-13403	4816 ± 31	3660-3520	-20.5	
Ascott-under-Wychwood D1	LB	M?	16-17 yrs	Tibia	GrA-25294	4840 ± 40	3700-3530	-21.7	
Ascott-under-Wychwood D2	LB	?	38-40 wks in utero						
Ascott-under-Wychwood D3	LB	?	25-35 yrs	Scapula	OxA-13404	4945 ± 32	3780-3650	-20.1	
Ascott-under-Wychwood D4	LB	?	18+ yrs	Scapula	OxA-13404	4945 ± 32	3780-3650	-20.1	
Ascott-under-Wychwood D5	LB	M?	18+ yrs						

Ascott-under-Wychwood E1	LB	F	35-45 yrs	Humerus	OxA-13400 BM-1974R	4876 ± 33 4680 ± 160	3710-3540 3780-2940	-20.6 -21.4	
Ascott-under-Wychwood F1	LB	?	17-25 yrs						
Ascott-under-Wychwood F2	LB	?							
Barrow Hills (5354)	NM	?	10-12 yrs	Unspec	OxA-1882	4650 ± 80	3640-3110	-21.0	
Barrow Hills (5356)	NM	F?	Adult	Femur & tibia	OxA-4359	4700 ± 100	3700-3110	-21.1	
Barrow Hills (5352 - A)	OB	M	50+ yrs	Long bone	BM-2710	4530 ± 50	3490-3030	-20.1	
Abingdon	CE	?	Child						
Abingdon	CE	?	Child						
Abingdon	CE	?	Child						
Waylands Smithy 6	LB	M	Adult	Femur	OxA-13203	4749 ± 38	3640-3380	-20.8	
Waylands Smithy 7	LB	M	Adult	Femur	OxA-14769	4812 ± 35	3660-3520	-20.6	
Waylands Smithy 8	LB	M	Adult	Femur	OxA-14770	4802 ± 35	3650-3520	-20.7	
Waylands Smithy 9	LB	M	Adult	Femur	OxA-14771	4749 ± 34	3640-3380	-20.4	
Waylands Smithy 10	LB	M	Adult	Femur	OxA-14772	4787 ± 34	3650-3520	-20.8	
Waylands Smithy 11	LB	M?	Adult	Femur	OxA-13175	4717 ± 45	3640-3370	-20.7	
Waylands Smithy 12	LB	M	Adult	Femur	KIA-27623	4750 ± 32	3640-3380	-10.7	
Waylands Smithy 13	LB	M	Adult	Femur	OxA-13170	4791 ± 40	3660-3380	-20.4	
Waylands Smithy 14	LB	F?	Adult	Femur	KIA-27624	4779 ± 40	3650-3380	-25.7	
Waylands Smithy 15	LB	M	Adult	Femur	KIA-27625	4713 ± 37	3630-3370	-22.7	
Waylands Smithy 16	LB	M	Adult	Femur	OxA-14471	4808 ± 38	3660-3520	-20.9	
Waylands Smithy 17	LB	M	Adult	Femur	OxA-13330	4817 ± 39	3690-3520	-20.8	
Waylands Smithy 18	LB	F?	Adult	Humerus	KIA-27626	4714 ± 39	3630-3370	-18.7	
Waylands Smithy 19	LB	?	Child	Femur	OxA-13176	4809 ± 44	3700-3390	-20.8	
Waylands Smithy 20	LB	?	Adult	Metatarsal	OxA-13171	4761 ± 41	3640-3380	-20.9	
Waylands Smithy 21	LB	?	Adult	Metatarsal	OxA-13245	4770 ± 38	3640-3380	-20.8	
Waylands Smithy 22	LB	?	Adult	Metatarsal	OxA-13246	4603 ± 35	3510-3130	-21.2	
Waylands Smithy 23	LB	?	Adult	Metatarsal	OxA-13325	4707 ± 40	3630-3370	-20.4	

Lyneham	LB	F	Adult						
Mount Farm	OB	M	Adult	Femur	OxA-15748 HAR-4673	4738 ± 35 4460 ± 90	3640-3380 3370-2910	-20.9 -22.9	
Yarnton	NM	F	Adult	Calcined bone	OxA-14479	4867 ± 35	3710-3540		

APPENDIX 4 – SKELETAL RECORDING FORMS

Site Code/Context No./Name: Bray, Hoveringham gravel pit

<u>DISARTICULATED MATERIAL</u>

Bone	Side	Segment	%	Age	Sex	Pathology	Photo
4 x cranial fragments including frontal, parietal x 1, occipital Frontal fragment including left orbit and glabella				Adult	Male?		Not allowed to take photos of any of the human remains
Mid-shaft tibial fragment				Adult	?	'Flattening' to distal end, bulges, thicker than rest. ?regrowth	
Bones labelled 'Bray site A S2/63 227.63 4 skull S1/63 227.63 3 skull 227.63 2 femur Scrap of paper says 'left tibia, slightly built individual, 5'11-6' [180-183 cm] tall prob male'							
Reading Museum notes from The Berkshire Archaeology Journal vol 61 (1964:99): '…Neolithic antler comb close to a human skull cap and a broken femur…part of human occipital bone and 10 gritty sherds some of which are Windmill Hill ware 227.63/1-4 and 262:63/7-17'							

Site Code/Context No./Name __Lambourn____

DISARTICULATED MATERIAL

Bone	**Side**	**Segment**	**%**	**Age**	**Sex**	**Pathology**	**Photo**
Cranium fragments, previously reconstructed. From primary ditch silts.					F	None observed	Not permitted
Femur. From secondary ditch silts.	Left			18+	U	None observed	Not permitted

Site Code/Context No. Offham Hill 1977.23

DISARTICULATED MATERIAL

Bone	Context	Side	Segment	%	Age	Sex	Pathology	Photo
Femur	OD S2 L2		Distal		Adult	?		
Mandible & teeth	0D S2 L4	Right		50%	30-35 years	?	Wear to teeth, odontoma to palate	Y
Mandible	OD S2 L3				35-40 years	?		
Fibula	OD S3 L4				Adult	?		
2nd phalanx	OD S4 L2				Adult	?		
Rib fragment	OD S4 L2				Adult	?		

Site Code/Context No./Name _Whitehawk Camp____

DISARTICULATED MATERIAL

No	Bone	Side	Segment	%	Age	Sex	Pathology	Photo
130 4	Skull fragment				18-30 yrs	M?		
131 5	Skull fragment				18-30 yrs	M?		
132 6	Skull fragment				7-12 yrs	?		
6	Skull fragment				18-45 yrs	?		
133 7	Skull fragment				18-30 yrs	F?		
134 8	Skull fragment				13-17 yrs	?		

Site Code/Context No. Nutbane Pit 923 (unstratified)

DISARTICULATED MATERIAL

Bone	Side	Segment	%	Age	Sex	Pathology	Photo
Hand and foot phalanges				Adult			
Left? Hand				Adult			
Left foot calcaneus & talus				Adult			
Right foot MT1				Adult			
Right foot MT1 & PP				Adult			
Right foot calcaneus, talus, cuboid				Adult			
Right foot <T5				Adult			
Left foot calcaneus (juv?)				Juvenile			
Right foot MT5 (juv)				Juvenile			

Site Code/Context No./Name _WINCM:ARCH 3768 Barton Stacey/Moody's Down long barrow_

DISARTICULATED MATERIAL

Bone	Side	Segment	%	Age	Sex	Pathology	Photo
Commingled fragmentary bones as per attached inventory. Age and sex estimates: arrived at via multifactorial methods including: epiphyseal fusion, sciatic notch, auricular surface, glenoid fossa of scapula, mastoid process, mental eminence, supraorbital margin, nuchal crest, glabella. Pathology noted: cribra orbitalia noted by previous researcher (Browne, 2002), very faint porosity, Schmorl's nodes to thoracic vertebrae				18+	F?		
				18+	F?		
				18+	M?		
				13-17/	?		

Inventory of fragmentary human remains

Cranium: 1 x poorly reconstructed cranium, 1 x mandible frag (inc 1 x R LM1, 1 x orbit frag, 1 x mastoid process frag
Scapula: 1 x glenoid fossa
Humerus: 4 x frags (2 x prox with 1 x unfused, 3 x distal)
Ulna: 3 x prox, 3-4 dist (1 x unfused), 1 x shaft
Vertebrae: 3 x cervical, 4 x thoracic (Schmorl's nodes), 4 x lumbar (path)
Ribs: 4 x unsided frags
Pelvis: 3 x sciatic notch, 1 x auricular surface
Femur: 2 x L, 2 x R, 1 x R distal, 1 x L dist, 1 x prox, 5 x shaft frags, 1 x patella
Tibia: 6 x prox (2 x juv, 1 x path), 1 x dist
Fibula: 1 x dist, 3 x shaft frags
Talus: x 2
Calcaneus: x 3
Metatarsal: x 1

Site Code/Context No./Name __Staines causewayed enclosure________________________________

DISARTICULATED MATERIAL

Bone	Side	Segment	%	Age	Sex	Pathology	Photo
Mandible (7585)				18-30 years	Male		
Partial forearm and hand (5787?)				18+ years	?		
Forearm				18+ years	Female?		
Skull (A)				18-30 years	Female?		
Skull (B)				18-30 years	Male	2 x healed head wounds (decap)	
Fibula		Proximal		Neonate	?		
Cremation (7588)				18+ years	Female?		

Site Code/Context No. _Blackpatch shaft 4 / 61/1585/A___________________________________

DISARTICULATED MATERIAL

Bone	Side	Segment	%	Age	Sex	Pathology	Photo
3 x mandible frags with 1 x LM1 in situ & 3 x other loose teeth ? whether all from same individual. Originally recorded as 'from a very young person'				Adult	?	Teeth very worn – impression of older individual (contrary to original interpretation)	Shaft 4
Cremated bones 74g				Adult & juvenile?	?		Shaft 7

Site Code/Context No./Name _E11.87.429 Cissbury Shaft H_________________________________

DISARTICULATED MATERIAL

Bone	Side	Segment	%	Age	Sex	Pathology	Photo
Cranium (reconstructed), lacking maxilla, nasal bones, mandible Curatorial paper trail suggests this is the cranium from Shaft H burial, excavated in 1875 by Pitt Rivers (skeletal report by George Robertson, 1877 & 1878) Accessioned to Natural History Museum (Greenwell collection) with box of crania and mandibles including juvenile, and box of human vertebrae + animal bones				30+ Sagittal suture partially fused (30-40 years) Lambdoid sutures not closed (<30-40 years) Coronal sutures partially fused (begin fusing age 24, average 30-40 years)	Female Nuchal crest = 3 Supraorbital margin =3 Mastoid process = 3 or 4 Glabella = 2 Frontal slope = F	None noted	Yes

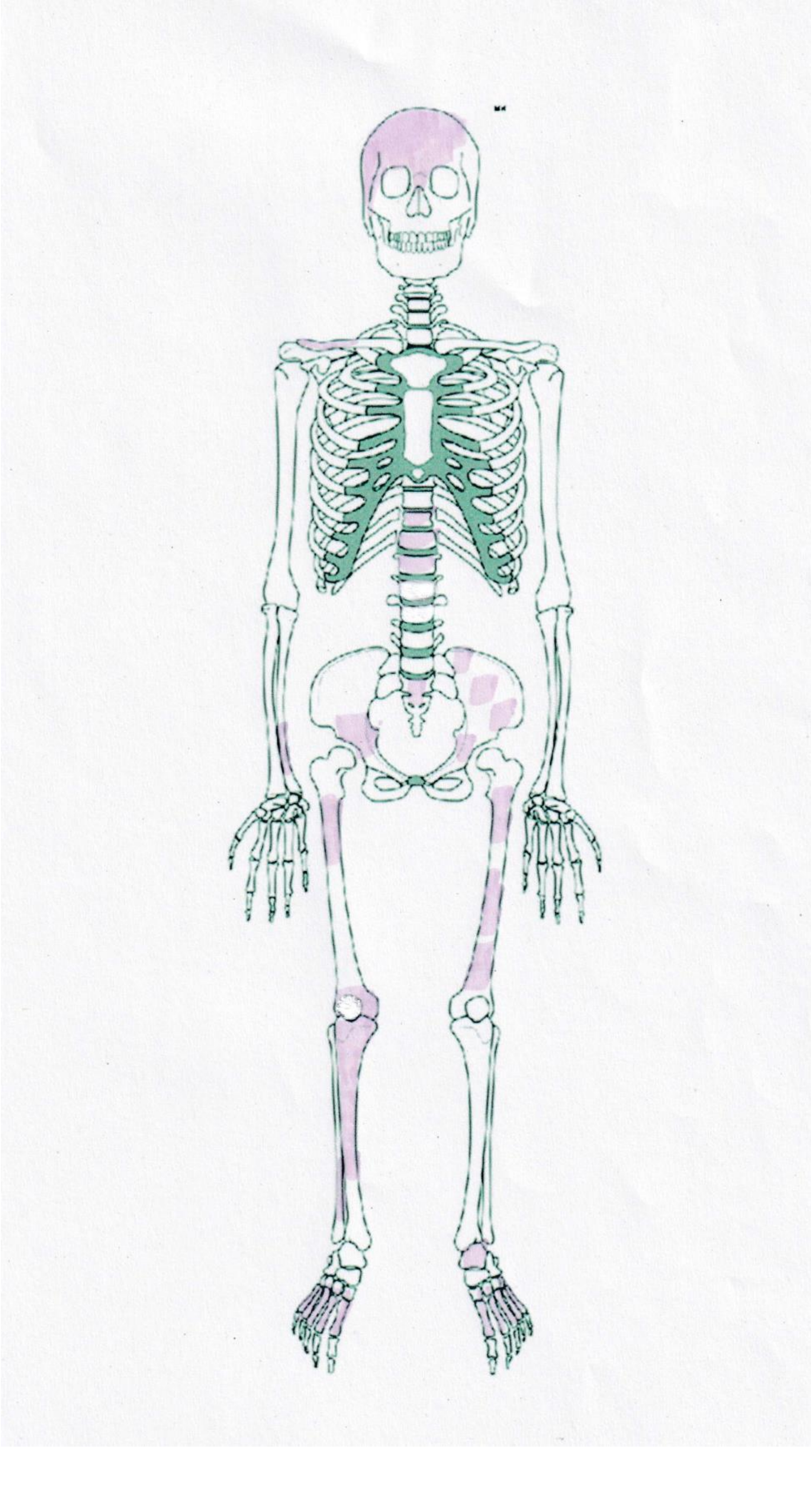
Skeleton Number: **74.28 Farmhill, Courtlands Hill** **Site: Pangbourne**

SUMMARY

Sex	Female
Age estimation	45+ years
Stature (Trotter, 1970)	(originally estimated as 4ft 11in)
Significant pathology	Dental
Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%_√ up to 75%__ >75%__
Comments	Previously on display at Reading Museum. Label says 'Skeletal remains of New Stone Age woman from Pangbourne. This skeleton (with associated animal remains and pottery) was found while making a tennis lawn at Pangbourne. She lived many hundreds of years BC and the pottery buried near her is the oldest local pottery we have in the museum. An expert examination of the bones suggests that the woman squatted a great deal – before chairs were invented. The teeth show much wear with coarse food. In height she stood only about 4ft 11in which is short for a Neolithic person. This exhibit is of much scientific importance.' The find was recorded in the Proceedings of the Prehistoric Society of East Anglia, vol VI (Piggott, 1928:30; Buxton, 1928:31-33). Relatively dated by pottery.

Date: 12.12.2017 Initials: DC

Skeleton Number: 74.28 Farmhill, Courtlands Hill **Site: Pangbourne**



Skeleton Number: 74.28 Farmhill, Courtlands Hill **Site: Pangbourne**

Skeletal Elements

Cranial Bones

Bone	**Right**	**Left**	**Bone**	
Parietal	√	√	Frontal	√
Temporal	√		Occipital	√
Maxilla			Sphenoid	
Nasal			Vomer	
Zygomatic			Ethmoid	
Lacrimal			Hyoid	
Palatine			Cricoid	
Mandible	√		Thyroid	

4 x unsided rib frags

Vertebrae

C1		T6	
C2		T7	
C3		T8	
C4		T9	
C5		T10	
C6		T11	
C7		T12	
T1	5 x T-verts + 5 x vert frags	L1	
T2		L2	
T3		L3	
T4		L4	
T5		L5	

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius					
Ulna				√	
Femur		√			√
Tibia	√	√	√		
Fibula				√	

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius					
Ulna					
Femur		√	√?	√?	
Tibia					
Fibula					

Right

Bone	>75%	50-75	50-25	<25%
Ilium		√?		
Ischium				
Pubis				
Scapula				√
Clavicle				
Patella				
Bone	>75%	50-75	50-25	<25%
Sternum				
Coccyx				
Sacrum				√

Left

Bone	>75%	50-75	50-25	<25%
Ilium	6 x pelvis frags inc partial acetabulum, L(?) auricular surface of ilium			
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Right	1	2	3	4	5
Metacarpals					
Metatarsals	√	√	√	√	√

Left	1	2	3	4	5
Metacarpals					
Metatarsals	√	√	√	√	√

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right									
Left									
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right									
Left	√	√							

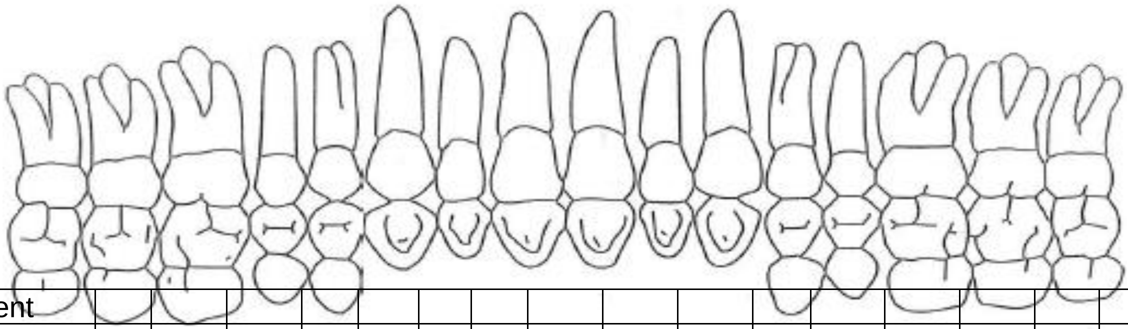
Hand Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___
Foot Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___

Skeleton Number: 74.28 Farmhill, Courtlands Hill **Site: Pangbourne**

Dentition

MAXILLARY

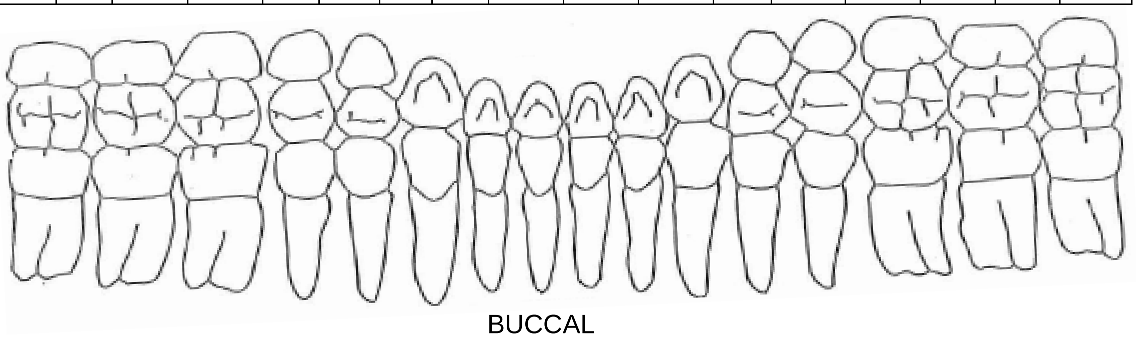
BUCCAL



Present																
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	**L**
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Present	√*	√*	√*													
Caries																
Calculus	√		√													
Periodontal disease																
EH																
Wear	√	√	√													
Abscess																
AMTL																
PMTL				√	√	√	√	√	√?	√?	√?	√?				



BUCCAL

MANDIBULAR

*M1 much smaller than M2 and M3 which are misshapen. Looks similar to Park Farm Burial 3 lower right 2nd premolar (overcrowding)? Drawn on separate sheet as photography not allowed.

Skeleton Number: 74.28 Farmhill, Courtlands Hill **Site: Pangbourne**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull		
	L	R		L	R
Ventral arc (1-3)			Nuchal crest (1-5)	2	
Subpubic concavity (1-3)			Supraorbital margin (1-5)	2	3
Ischiopubic ramus ridge (1-3)			Mastoid process (1-5)		
Greater Sciatic Notch (1-5)			Glabella (1-5)		
Preauricular sulcus (1-3)			Jaw shape (1-3) mental eminence	2	
Overall shape			Overall shape		
Estimated sex – pelvis			Estimated sex - skull	F	

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F			Humerus:		
Radius Head: >23mm=M, <21mm=F			Ulna:		
Femoral Head: >48mm =M, <42mm=F	38.44 mm	38.17 mm	Radius:		
Fem. Bicon. width: <76mm=M, >74=F	65.89 mm	66.58 mm	Femur:		
Scap. Glen. width: >28.6mm=M, >26.1mm=F	23.06 mm (F)		Tibia:		
Clav. Max. Length: >150mm=M, <138mm=F			Fibula:		

Age estimation

	Left	Right
Dental eruption & development	18+	
Dental attrition	45+	
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	40+ years	____________
Rib-phase	____________	____________
Unfused joints	____________	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest			Proximal humerus		
Medial clavicle			Distal femur		

List other significant bone development and/or fusion below:

Observation of sacrum & other comments

Skeleton Number: 74.28 Farmhill, Courtlands Hill **Site: Pangbourne**

Skeletal Pathology

Photographs

Number	Description
	Photography not permitted by museum
	Dental pathology as described on page 4

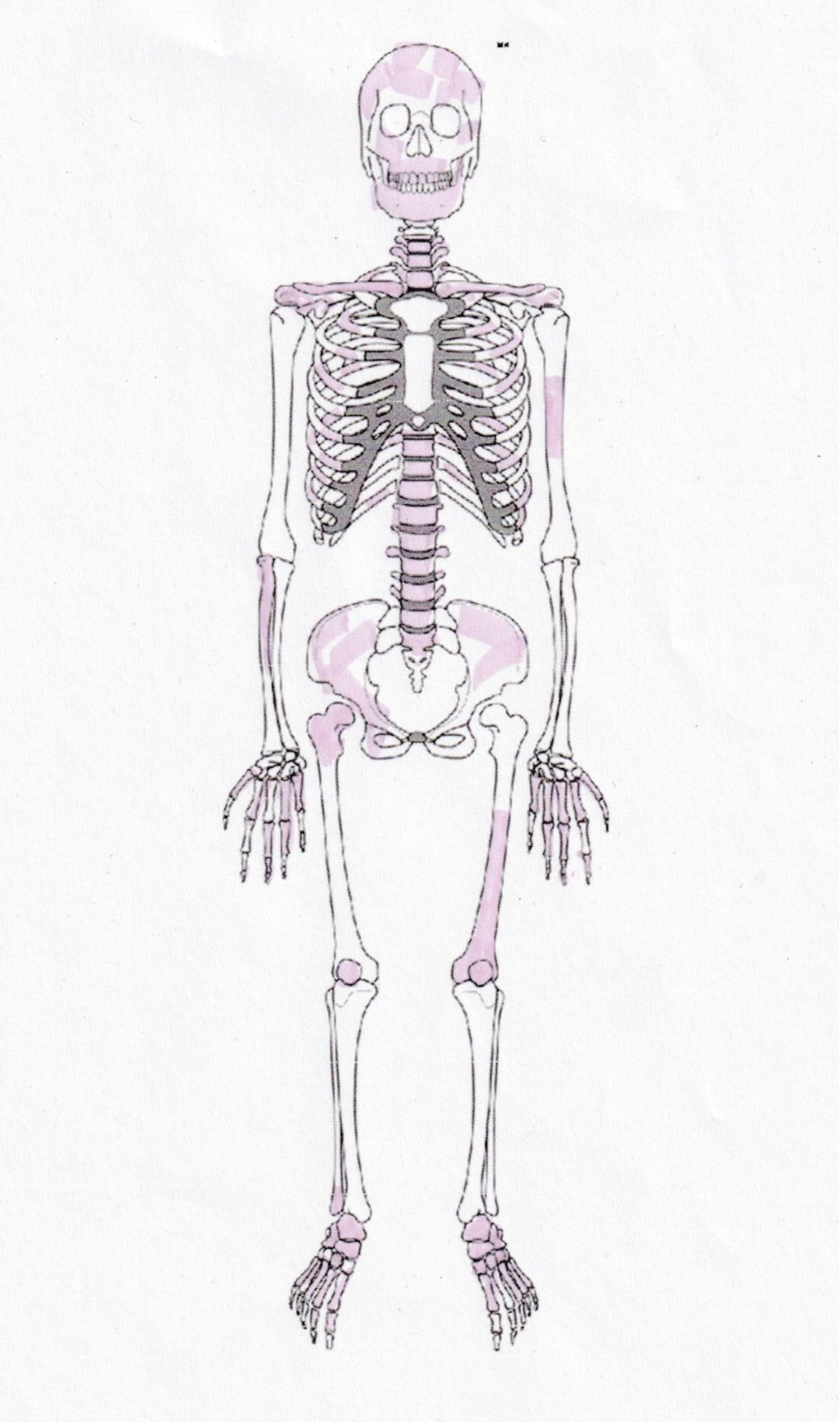
Skeleton Number: Burial 1 **Site: Park Farm**

SUMMARY

Sex	-
Age estimation	c.16 years
Stature (Trotter, 1970)	-
Significant pathology	None observed
Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%_√_
Completeness	Degree of completeness: <25%__ 25-50%_√ up to 75%__ 75%_√_
Comments	Cranium in multiple fragments but previously reconstructed. Previously assessed by Hugh Carter, Reading Museum, 1980 (report in Richards, 1990: microfiche B6-8) Burial described as 'crouched' and associated with cow molar and skull of short-tailed vole. Photographs of burial *in situ*.

Date: 29.11.2017 **Initials: DC**

Skeleton Number: Burial 1 **Site: Park Farm**



Skeleton Number: Burial 1 **Site: Park Farm**

Skeletal Elements

Cranial Bones : 20+ fragments

Bone	**Right**	**Left**	**Bone**	
Parietal			Frontal	
Temporal			Occipital	
Maxilla	Frag	Frag	Sphenoid	
Nasal			Vomer	
Zygomatic			Ethmoid	
Lacrimal			Hyoid	
Palatine			Cricoid	
Mandible	Partial	√	Thyroid	

Vertebrae

C1	√	T6	√
C2	√	T7	√
C3	√	T8	√
C4	√	T9	√
C5	√	T10	√
C6	√	T11	√
C7	√	T12	√
T1	√	L1	√
T2	√	L2	√
T3	√	L3	√
T4	√	L4	√
T5	√	L5	√

Multiple rib fragments

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius					
Ulna					
Femur	Previously sampled for C14				√
Tibia	Frag				√
Fibula					

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius					
Ulna					
Femur	Previously sampled for C14				√
Tibia	Frag				√
Fibula		√	√	√	√

Right

Bone	>75%	50-75	50-25	<25%
Ilium	√			
Ischium	√			
Pubis	√			
Scapula	√			
Clavicle				
Patella	√			
Bone	>75%	50-75	50-25	<25%
Sternum				
Coccyx				
Sacrum	√			

Left

Bone	>75%	50-75	50-25	<25%
Ilium	√			
Ischium	√			
Pubis	√			
Scapula			√	
Clavicle	√			
Patella	√			

Right	1	2	3	4	5
Metacarpals					
Metatarsals	√	√	√	√	

Left	1	2	3	4	5
Metacarpals	√	√	√	√	
Metatarsals	√	√	√	√	√

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right									
Left	√	√							
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right	√	√	√	√	√	√	√		
Left	√	√	√	√	√	√	√		

Hand Proximal phalanges _2_ Middle phalanges ___ Distal phalanges ___

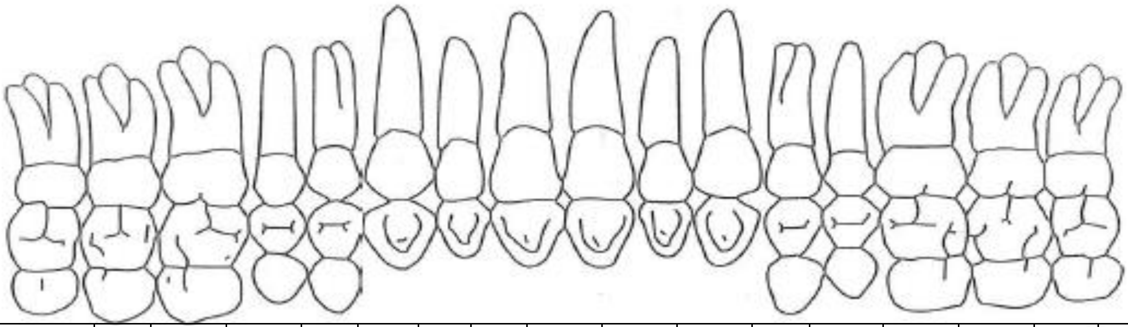
Foot Proximal phalanges ___ Middle phalanges ___ Distal phalanges _2_

Skeleton Number: Burial 1 **Site: Park Farm**

Dentition

MAXILLARY

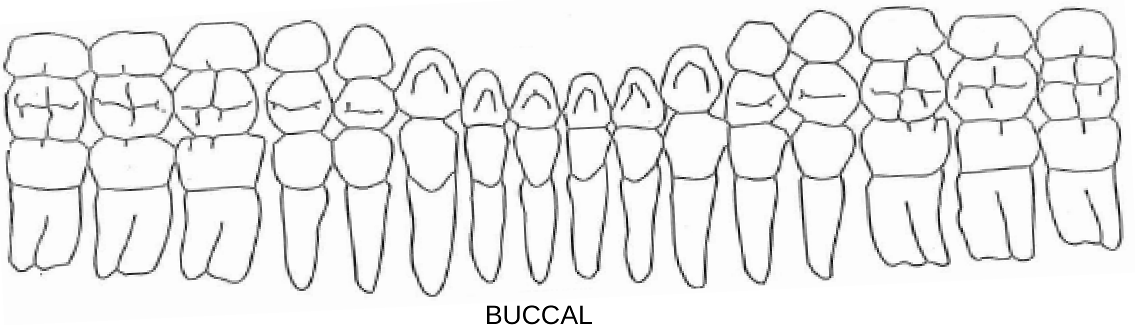
BUCCAL



Present	U	√	√											√	√	U
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	L
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Present	U	√	√	√	√	√	√	√	√					√	√	U
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL										√	√	√	√			



BUCCAL

MANDIBULAR

√ = Present U= unerupted

Skeleton Number: Burial 1 **Site: Park Farm**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull	
L R			L R	
Ventral arc (1-3)			Nuchal crest (1-5)	
Subpubic concavity (1-3)			Supraorbital margin (1-5)	
Ischiopubic ramus ridge (1-3)			Mastoid process (1-5)	
Greater Sciatic Notch (1-5)			Glabella (1-5)	
Preauricular sulcus (1-3)			Jaw shape (1-3)	
Overall shape			Overall shape	
Estimated sex – pelvis			Estimated sex - skull	

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F			Humerus:		
Radius Head: >23mm=M, <21mm=F			Ulna:		
Femoral Head: >48mm =M, <42mm=F			Radius:		
Fem. Bicon. width: <76mm=M, >74=F			Femur:		
Scap. Glen. width: >28.6mm=M, >26.1mm=F			Tibia:		
Clav. Max. Length: >150mm=M, <138mm=F			Fibula:		

Age estimation

Dental eruption & development   c.16 years
Dental attrition   __________

	Left	Right
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	____________	____________
Rib-phase	____________	____________
Unfused joints	____________	____________

	fused	unfused		fused	unfused
Inferior angle of scapula		√	Proximal tibia		√ 15/16+
Tip of coracoids			Vertebral end plates		√
Ramal epiphysis			Distal radius		√16+
Iliac crest		√	Proximal humerus		√
Medial clavicle		?	Distal femur		√14/15+

List other significant bone development and/or fusion below: distal humerus fused, ulna partially fused, acetabulum partially fused, sacrum unfused
Cranial suture closure:

Skeleton Number: Burial 1 **Site: Park Farm**

Skeletal Pathology

Photographs

Number	Description
	None observed

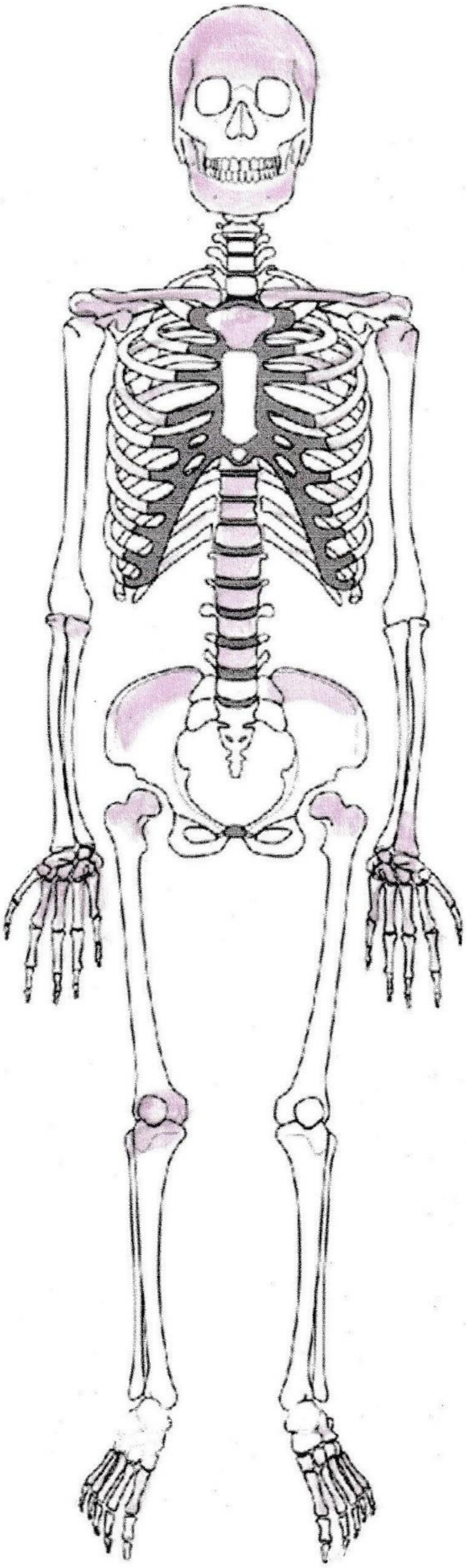
Skeleton Number: Burial 2 **Site: Park Farm**

SUMMARY

Sex	Female
Age estimation	25-35 years
Stature (Trotter, 1970)	Originally estimated as 153.4 cm (5ft 0in)
Significant pathology	Osteoarthritis, Schmorl's node
Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%_√_
Completeness	Degree of completeness: <25%__ 25-50%_√ up to 75%__ 75%_√_
Comments	Cranium reconstructed previously. Teeth also appear to have been reassembled. Separate bag containing loose bones (phalanges, left trapezium and rib fragment) labelled "from within skull". Also bag of vertebrae fragments labelled "from under pelvis". Larger, supernumerary hand bones mixed in with those judged to be from this individual (lunate, capitate, scaphoid, hamate). Previously assessed by Hugh Carter, Reading Museum, 1980 (report in Richards, 1990: microfiche B6-8) Burial described as 'crouched'. Loose human upper incisor found associated with pelvis fragments. Photographs of burial *in situ*.

Date: 29.11.2017 **Initials: DC**

Skeleton Number: Burial 2 **Site: Park Farm**



Skeleton Number: Burial 2 **Site: Park Farm**

Skeletal Elements

Cranial Bones

Bone	Right	Left	Bone	
Parietal	√	√	Frontal	√
Temporal	√	√	Occipital	√
Maxilla			Sphenoid	
Nasal			Vomer	
Zygomatic			Ethmoid	
Lacrimal			Hyoid	
Palatine	√	frag	Cricoid	
Mandible	√	√	Thyroid	

Vertebrae

C1	√	T6	√
C2	√	T7	√
C3	√	T8	√
C4	√	T9	√
C5	√	T10	√
C6	√	T11	√
C7	√	T12	
T1	√	L1	√
T2	√	L2	√
T3	√	L3	√
T4	√	L4	
T5	√	L5	

Right ribs: 8 + multiple frags
Left ribs: 6

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius	√?				
Ulna	√?				
Femur	√	Previously sampled for C14			
Tibia	√				
Fibula	√				

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus	√	√			
Radius				√?	√
Ulna					
Femur	√	Previously sampled for C14			
Tibia					
Fibula					

Right

Bone	>75%	50-75	50-25	<25%
Ilium				√
Ischium				
Pubis				
Scapula		√		
Clavicle	√			
Patella	√			

Left

Bone	>75%	50-75	50-25	<25%
Ilium				√
Ischium				
Pubis				
Scapula		√		
Clavicle	√			
Patella				

Bone	>75%	50-75	50-25	<25%
Sternum				√
Coccyx				
Sacrum				

Right	1	2	3	4	5
Metacarpals		√	√	√	√
Metatarsals	√	√	√	√	√

Left	1	2	3	4	5
Metacarpals	√	√	√	√	√
Metatarsals	√	√	√	√	√

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right	√	√	√	√		√	√	√	
Left	√	√	√			√	√	√	
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right									
Left					√	√	√		

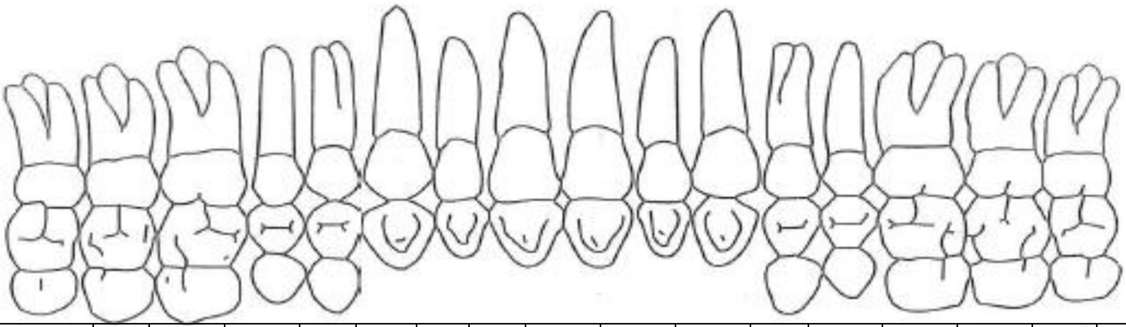
Hand Proximal phalanges _8_ Middle phalanges _9_ Distal phalanges _7_
Foot Proximal phalanges _7_ Middle phalanges _0_ Distal phalanges _2_

Skeleton Number: Burial 2 **Site: Park Farm**

Dentition

MAXILLARY

BUCCAL

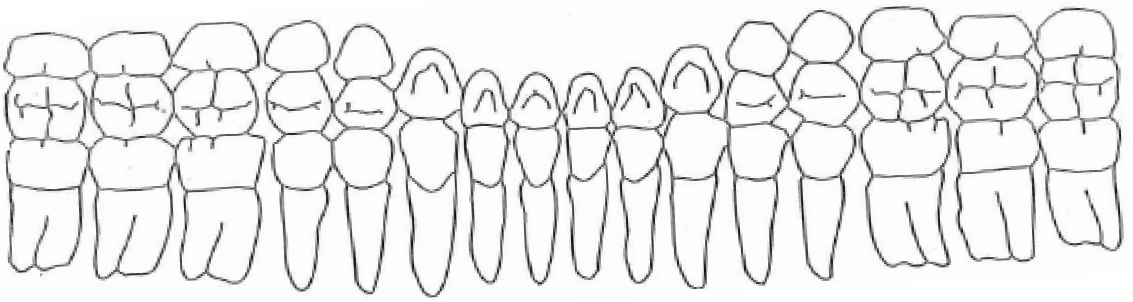


Present		√	√	√	√	√	√	√			√		√	√	√	√
Caries																
Calculus																
Periodontal disease																
EH																
Wear		√	√	√	√	√					√		√	√	√	
Abscess																
AMTL																
PMTL																

R 1 2 3 4 5 6 7 8 | 9 10 11 12 13 14 15 16 **L**

32 31 30 29 28 27 26 25 | 24 23 22 21 20 19 18 17

Present	√	√	√	√	√	√					√	√	√	√	√	√
Caries																
Calculus	√	√	√	√	√	√					√	√	√	√	√	√
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																



BUCCAL

MANDIBULAR

Skeleton Number: Burial 2 **Site: Park Farm**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull	
R	L	R		L
Ventral arc (1-3)			Nuchal crest (1-5)	3
Subpubic concavity (1-3)			Supraorbital margin (1-5)	
Ischiopubic ramus ridge (1-3)			Mastoid process (1-5)	2 or 3
Greater Sciatic Notch (1-5)			Glabella (1-5)	2
Preauricular sulcus (1-3)			Jaw shape (1-3) mental eminence	3
Overall shape			Overall shape	
Estimated sex – pelvis			Estimated sex - skull	F?

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F		34.49 mm (F)	Humerus:		
Radius Head: >23mm=M, <21mm=F			Ulna:		
Femoral Head: >48mm =M, <42mm=F		36.17 mm (F)	Radius:		
Fem. Bicon. width: <76mm=M, >74=F			Femur:		
Scap. Glen. width: >28.6mm=M, >26.1mm=F	22.75 mm (F)	22.75 mm (F)	Tibia:		
Clav. Max. Length: >150mm=M, <138mm=F	131.46 mm (F)	129.96 mm (F)	Fibula:		

Age estimation

	Left	Right
Dental eruption & development	____________	
Dental attrition	25-35 years	
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	(Photo taken)	____________
Rib-phase	____________	____________
Unfused joints	____________	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest	√		Proximal humerus		
Medial clavicle	√		Distal femur		

List other significant bone development and/or fusion below:

Cranial suture closure:

Skeleton Number: Burial 2 **Site: Park Farm**

Skeletal Pathology

Photographs

Number	Description
	OA to foot phalanges?
	Schmorl's node to 1x lumbar vertebra?

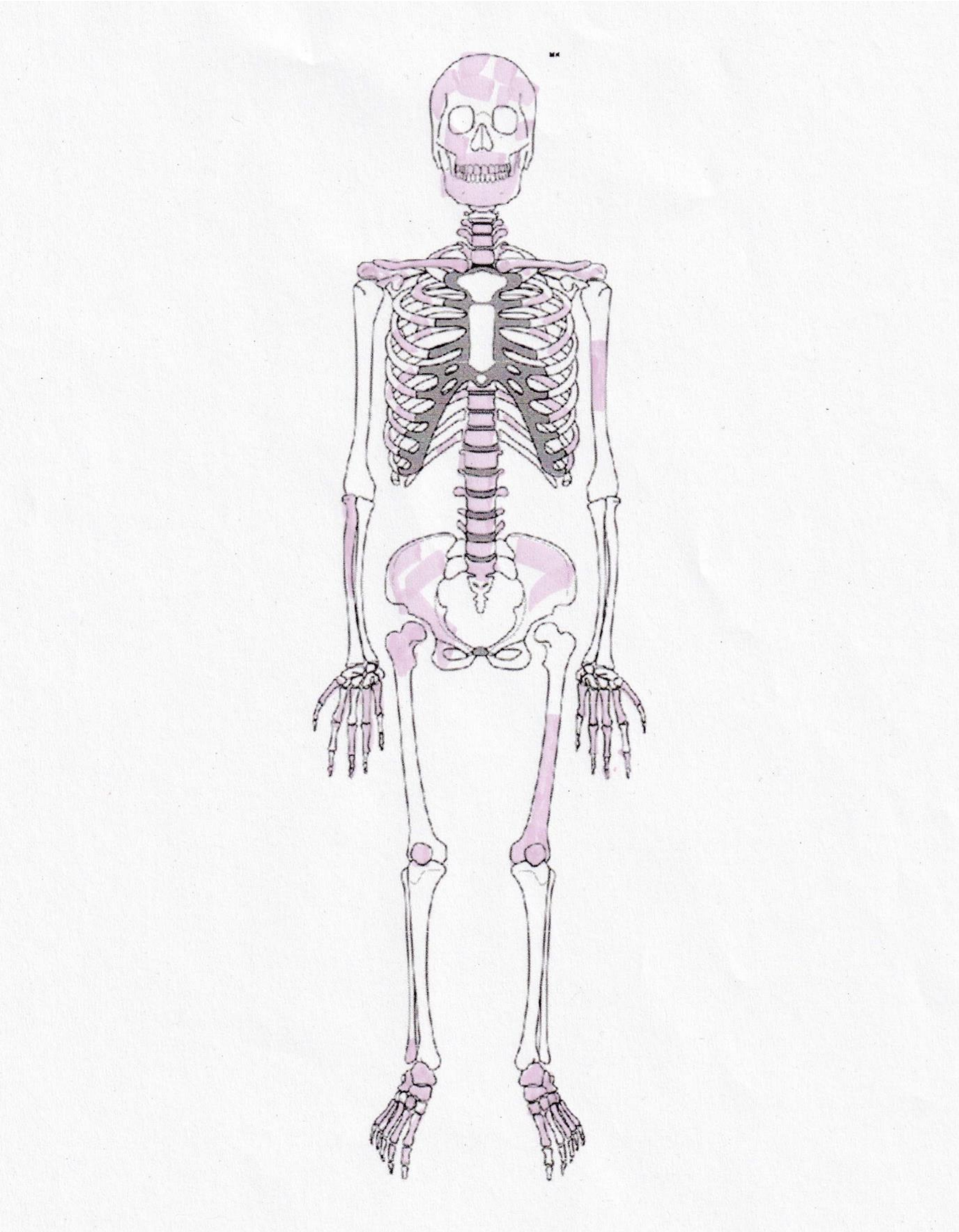
Skeleton Number: Burial 3 **Site: Park Farm**

SUMMARY

Sex	Male
Age estimation	25-35 years
Stature (Trotter, 1970)	Originally estimated as 176.53 (5ft 9in)
Significant pathology	Schmorl's nodes, dental
Preservation	Degree of preservation: <25%__ 25-50%__ up to 75% √_ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75% √_ >75%__
Comments	Previously assessed by Hugh Carter, Reading Museum, 1980 (report in Richards, 1990: microfiche B6-8) Burial described as 'crouched' A number of supernumerary bones within the archive (talus, patella), possible that some of the bones of Burials 2 and 3 have become mixed/confused over time.

Date: 29.11.2017 Initials: DC

Skeleton Number: Burial 3 **Site: Park Farm**



Skeleton Number: Burial 3 **Site: Park Farm**

Skeletal Elements

Cranial Bones

Bone	Right	Left	Bone	
Parietal	√	√	Frontal	√
Temporal	√	√	Occipital	√
Maxilla	√	√	Sphenoid	
Nasal	?		Vomer	
Zygomatic	√	√	Ethmoid	
Lacrimal	√	√	Hyoid	
Palatine	√	√	Cricoid	
Mandible	√	√	Thyroid	

Multiple rib fragments

Vertebrae

C1	x5	T6	
C2		T7	
C3		T8	
C4		T9	
C5		T10	
C6		T11	
C7		T12	
T1	x8	L1	√
T2		L2	√
T3		L3	√
T4		L4	√
T5		L5	√

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius	√	√	√		
Ulna					
Femur					
Tibia	√				
Fibula	√				√

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus			√		
Radius					√
Ulna					
Femur			√	√	√
Tibia					
Fibula					

Right

Bone	>75%	50-75	50-25	<25%
Ilium	Frag with acetabulum plus various other small fragments			
Ischium				
Pubis				
Scapula	√			
Clavicle	√			
Patella	√			

Left

Bone	>75%	50-75	50-25	<25%
Ilium	Various small fragments			
Ischium				
Pubis				
Scapula	√			
Clavicle	√			
Patella	√			

Bone	>75%	50-75	50-25	<25%
Sternum				
Coccyx				
Sacrum			√	

Right	1	2	3	4	5
Metacarpals	√	√		√	√
Metatarsals	√	√	√	√	√

Left	1	2	3	4	5
Metacarpals	√	√	√	√	√
Metatarsals	√		√	√	√

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right									
Left									
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right	√	√	√?			√?			
Left	√	√	√	√	√	√	√		

Hand Proximal phalanges _4_ Middle phalanges _6_ Distal phalanges _3_

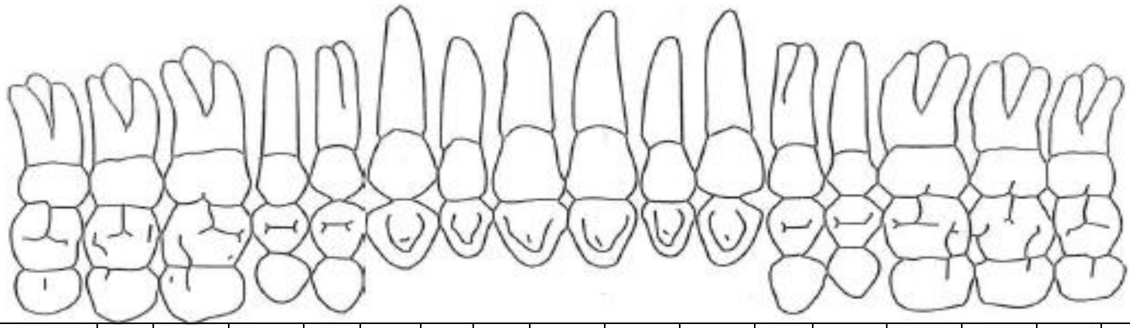
Foot Proximal phalanges _2_ Middle phalanges ___ Distal phalanges ___

Skeleton Number: Burial 3 **Site: Park Farm**

Dentition

MAXILLARY

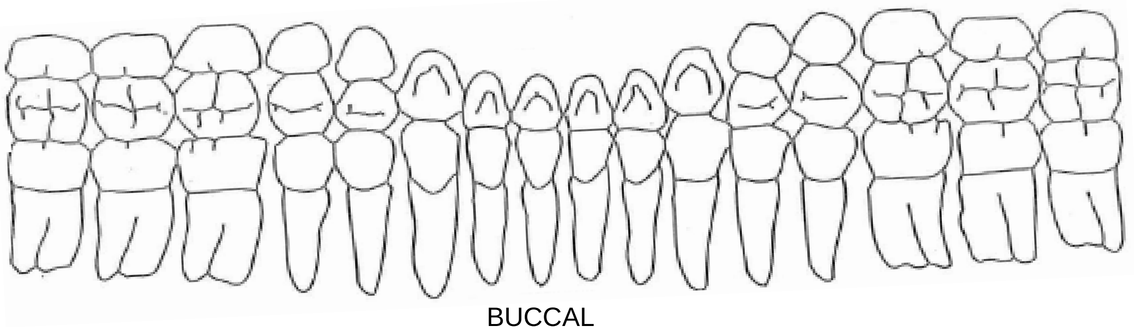
BUCCAL



Present			√	√	√	√	√	√		√	√	√	√	√	√	√
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	**L**
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Present	√	√	√	√*	√	√	√	√	√	√	√	√	√	√	√	√
Caries																
Calculus	√	√	√	√	√	√	√	√	√	√	√	√		√	√	
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																



BUCCAL

MANDIBULAR

*crowded out

Skeleton Number: Burial 3 **Site: Park Farm**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull	
R	L	R		L
Ventral arc (1-3)			Nuchal crest (1-5)	3 or 4
Subpubic concavity (1-3)			Supraorbital margin (1-5)	3
Ischiopubic ramus ridge (1-3)			Mastoid process (1-5)	4 | 4
Greater Sciatic Notch (1-5)			Glabella (1-5)	4
Preauricular sulcus (1-3)			Jaw shape (1-3) mental eminence	3 or 4
Overall shape			Overall shape	
Estimated sex – pelvis			Estimated sex - skull	M

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F			Humerus:		
Radius Head: >23mm=M, <21mm=F			Ulna:		
Femoral Head: >48mm =M, <42mm=F	48.96 mm (M)		Radius:		
Fem. Bicon. width: <76mm=M, >74=F			Femur:		
Scap. Glen. width: >28.6mm=M, >26.1mm=F		32.04 mm (M)	Tibia:		
Clav. Max. Length: >150mm=M, <138mm=F	160 mm (M)		Fibula:		

Age estimation

	Left	Right
Dental eruption & development	18+ years	
Dental attrition	25-35 years	
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	30-39 years	____________
Rib-phase	____________	____________
Unfused joints	None	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest			Proximal humerus		
Medial clavicle			Distal femur		

List other significant bone development and/or fusion below:

Observation of sacrum & other comments

Skeleton Number: Burial 3 **Site: Park Farm**

Skeletal Pathology

Photographs

Number	Description
	Schmorl's nodes to lumbar vertebrae

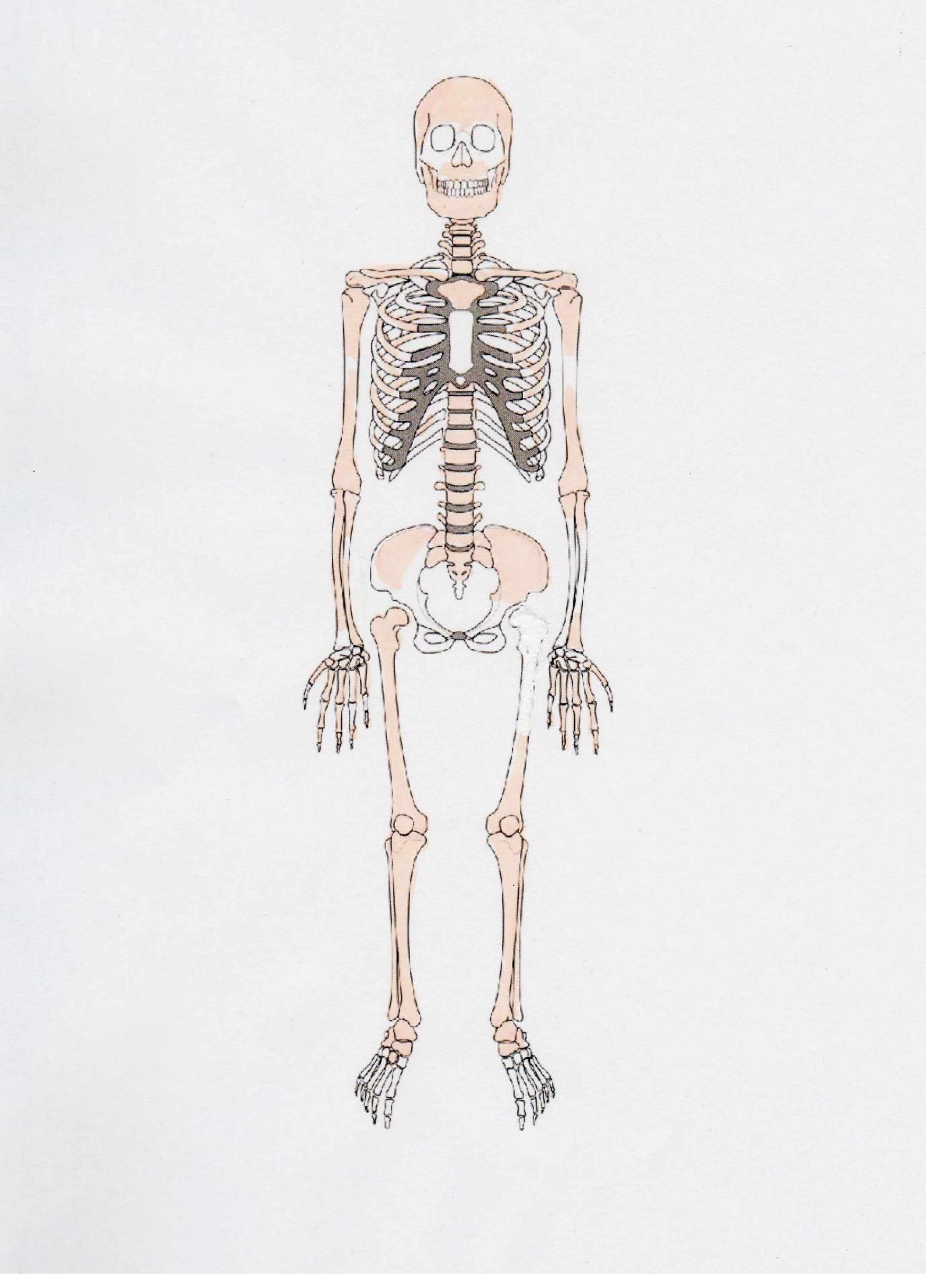
Skeleton Number: Burial 1/77.23 **Site: Offham Hill**

SUMMARY

Sex	Male (diminutive, with some metrical data suggesting female)
Age estimation	18-35 years
Stature (Trotter, 1970)	142.09 cm (right femur) = 4ft 8in
Significant pathology	Odontoma
Preservation	Degree of preservation: >75%
Completeness	Degree of completeness: >75%
Comments	Held in Barbican House, Lewes. Excavated in 1977 by Sussex Archaeological Field Unit. Report in Proceedings of the Prehistoric Society 43 (1977), 201-241. Radiocarbon dated for Gathering Time project: 3640-3370 cal BC (OxA-14177) Disarticulated human remains recorded on separate sheet.

Date: 09.05.2017 Initials: DC

Skeleton Number: Burial 1/77.23 **Site: Offham Hill**



Skeleton Number: Burial 1/77.23 **Site: Offham Hill**

Skeletal Elements

Cranial Bones - all fragmentary

Bone	**Right**	**Left**	**Bone**	
Parietal	Y	Y	Frontal	Y
Temporal			Occipital	Y
Maxilla	Y	Y	Sphenoid	
Nasal			Vomer	
Zygomatic			Ethmoid	
Lacrimal			Hyoid	Y?
Palatine	Y	Y	Cricoid	
Mandible	Y	Y	Thyroid	

Multiple unsided frags

R ribs:10 frags

L ribs:12 frags

Vertebrae

C1	**Y**	T6	**Y**
C2	Y	T7	Y
C3	Y	T8	Y
C4	Y	T9	Y
C5	Y	T10	Y
C6	Y	T11	Y
C7	Y	T12	Y
T1		L1	Y
T2	Y	L2	Y
T3	Y	L3	Y
T4	Y	L4	Y
T5	Y	L5	Y

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus	Y	Y		Y	Y
Radius	Y	Y	Y	Y	
Ulna	Y	Y		Y	Y
Femur	Y	Y	Y	Y	Y
Tibia	Y	Y	Y	Y	Y
Fibula					

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus	Y	Y		Y	Y
Radius	Y				Y
Ulna	Y				
Femur	Y	Y	Y	Y	Y
Tibia	Y	Y	Y	Y	Y
Fibula		Y	Y	Y	

Right

Bone	>75%	50-75	50-25	<25%
Ilium		Y		
Ischium				
Pubis				
Scapula				Y
Clavicle	Y			
Patella	Y			

Left

Bone	>75%	50-75	50-25	<25%
Ilium	Y			
Ischium				
Pubis				
Scapula		Y		
Clavicle	Y			
Patella	Y			

Bone	>75%	50-75	50-25	<25%
Sternum				Y
Coccyx				
Sacrum	Y			

Right	1	2	3	4	5
Metacarpals	Y	Y	Y	Y	Y
Metatarsals	Y	Y	Y	Y	Y

Left	1	2	3	4	5
Metacarpals	Y	Y	Y	Y	Y
Metatarsals	Y	Y	Y	Y	Y

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right			Y			Y	Y		
Left	Y	Y	Y	Y	Y		Y		
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right	Y	Y	Y	Y			Y		
Left	Y	Y				Y	Y		

Hand Proximal phalanges _5_ Middle phalanges _4_ Distal phalanges _5_

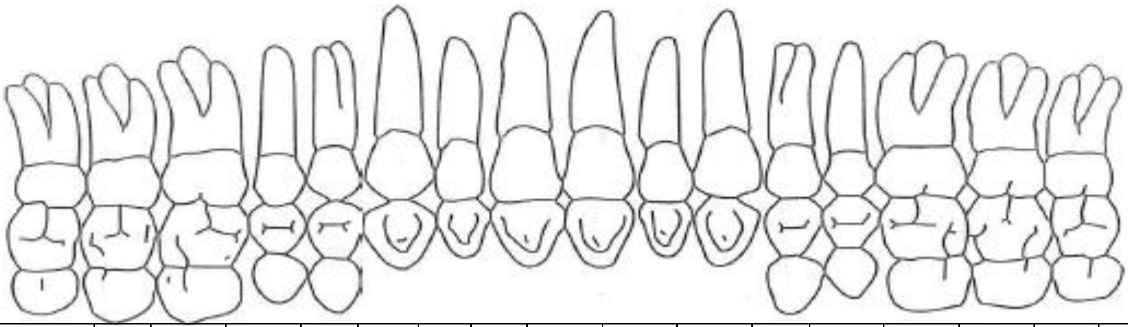
Foot Proximal phalanges _1_ Middle phalanges _3_ Distal phalanges _0_

Skeleton Number: Burial 1/77.23 **Site: Offham Hill**

Dentition

MAXILLARY

BUCCAL

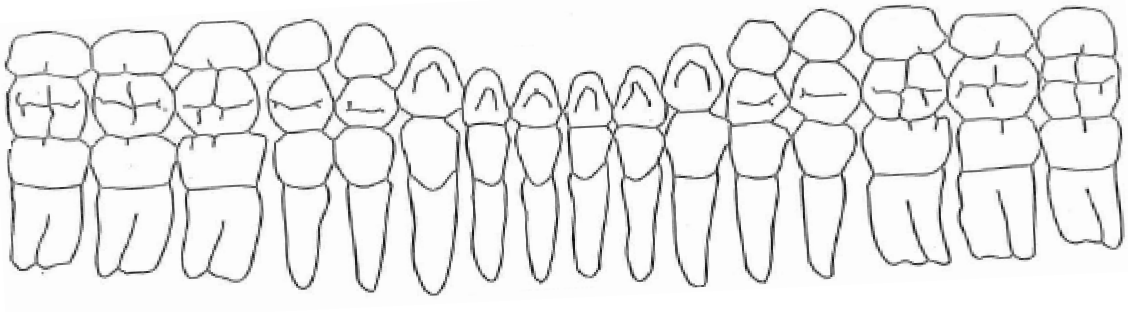


Present	Y	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y*	Y	Y	Y
Caries																
Calculus	Y	Y	Y	Y	Y							Y	Y	Y	Y	Y
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	**L**
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Present	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Caries	Y															
Calculus	Y	Y	Y	Y	Y							Y	Y	Y	Y	Y
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																

*Odontoma to left palate



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MANDIBULAR

Skeleton Number: Burial 1/77.23 **Site: Offham Hill**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull		
	L	R		R	L
Ventral arc (1-3)			Nuchal crest (1-5)	4/5	
Subpubic concavity (1-3)			Supraorbital margin (1-5)	3	
Ischiopubic ramus ridge (1-3)			Mastoid process (1-5)	3	4
Greater Sciatic Notch (1-5)	M		Glabella (1-5)	4/5	
Preauricular sulcus (1-3)			Jaw shape (1-3) mental eminence	4	
Overall shape			Overall shape		
Estimated sex – pelvis	M		Estimated sex - skull	M	

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F	-	38.35? mm (F)	Humerus:		
Radius Head: >23mm=M, <21mm=F	22.52 mm	19.59 mm (F)	Ulna:		
Femoral Head: >48mm =M, <42mm=F	42.40 m	42.31 mm	Radius:		
Fem. Bicon. width: <76mm=M, >74=F	75.69 mm	73.35 mm (F)	Femur:	339 mm	(415 mm previously)
Scap. Glen. width: >28.6mm=M, >26.1mm=F	26.01 mm (F)	24.94 mm (F)	Tibia:		
Clav. Max. Length: >150mm=M, <138mm=F	148.26 mm	-	Fibula:		

Age estimation

	Left	Right
Dental eruption & development	18+ years	
Dental attrition	25-35 year	
Pubic symphysis (Suchey-Brooks)	4M (IV)?	____________
Auricular surface	25 years	____________
Rib-phase	____________	____________
Unfused joints	None noted	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia	Y	
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest	Y		Proximal humerus	Y	
Medial clavicle	Y		Distal femur	Y	

List other significant bone development and/or fusion below:

Observation of sacrum& other comments

Skeleton Number: Burial 1/77.23 **Site: Offham Hill**

Skeletal Pathology

Photographs

Number	Description
	Odontoma to left palate

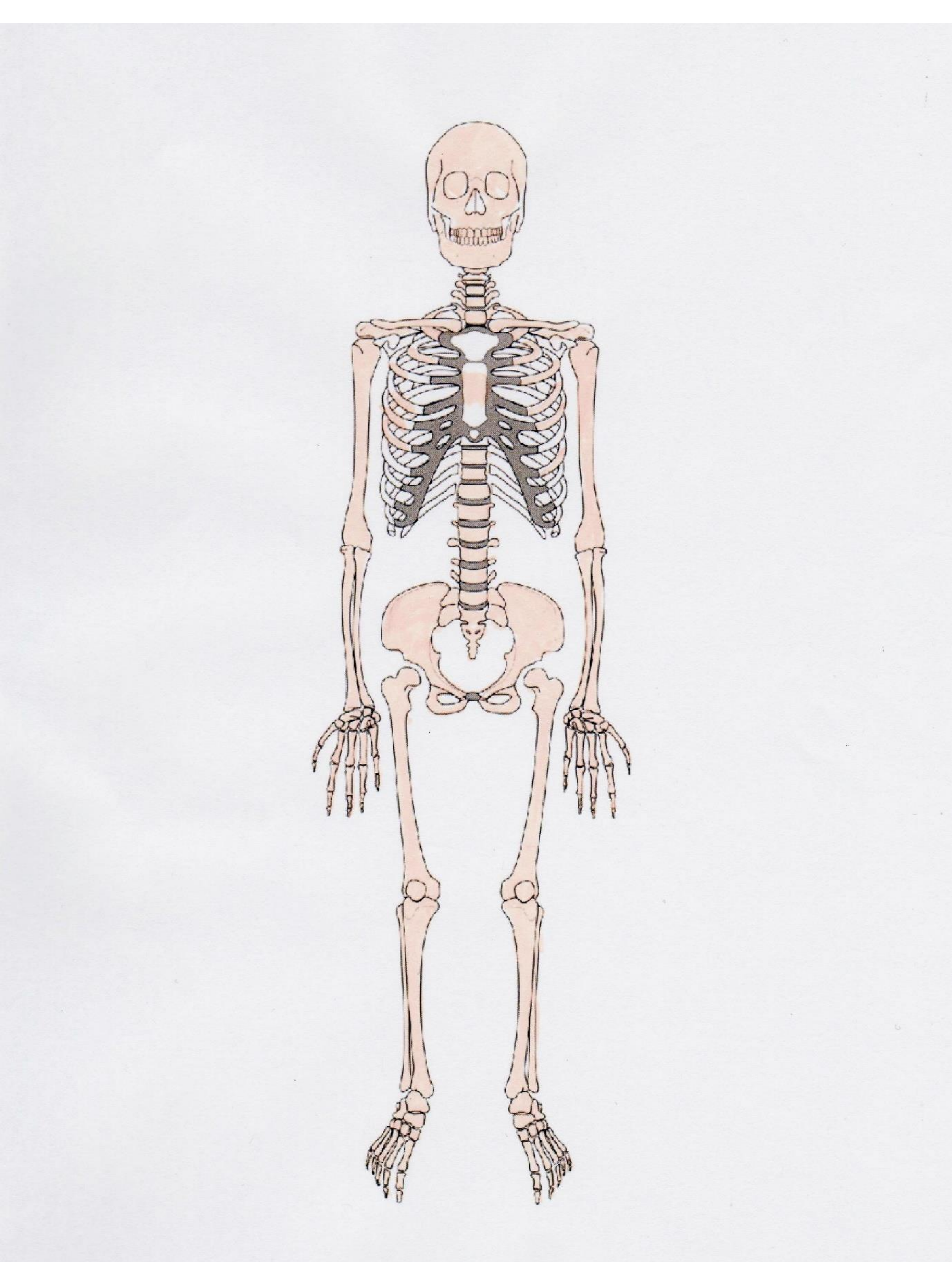
Skeleton Number: SKI 1933/128 **Site: Whitehawk Camp**

SUMMARY

Sex	Female
Age estimation	17-35
Stature (Trotter, 1970)	147.71 cm = 4ft 10 in
Significant pathology	Osteoarthritis, Schmorl's nodes, unusually worn teeth
Preservation	Degree of preservation: >75%
Completeness	Degree of completeness: >75%
Comments	Found in 1933 excavations, in Ditch 3 CII, in middle of ditch within occupation layer quite close to causeway, possibly one of the entrances to the enclosure. Burial position: semi-prone on left, head to NW, no in pre-cut grave. Grave goods: fossilised sea urchin. Skeletal remains previously reconstructed, glue on right auricular surface obscuring it, hands and feet articulated with wire, some cement on pelvis, cement and glue on long bones, skull glued together. Archaeology South East sampled for DNA, strontium and C14 (3660-3380 cal BC).

Date: 28.10.2016 Initials: DC

Skeleton Number: SKI 1933/128 **Site: Whitehawk Camp**



Skeleton Number: SKI 1933/128 **Site: Whitehawk Camp**

Skeletal Elements

Cranial Bones

Bone	**Right**	**Left**	**Bone**	
Parietal	Y	Y	Frontal	Y
Temporal	partial	partial	Occipital	Y
Maxilla	Y	Y	Sphenoid	
Nasal	partial	partial	Vomer	
Zygomatic	partial	partial	Ethmoid	
Lacrimal			Hyoid	
Palatine	Y	Y	Cricoid	
Mandible	Y	Y	Thyroid	

Vertebrae T x 9 + 6 frags, L x 3 + 1 frag

C1	**Y**	T6	
C2	Y	T7	
C3	Y	T8	
C4	Y	T9	
C5	Y	T10	
C6	Y	T11	
C7	Y	T12	
T1		L1	
T2		L2	
T3		L3	
T4		L4	
T5		L5	

R ribs 8 frags
L ribs 10 frags

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus	Y	Y	Y	Y	Y
Radius	Y	Y	Y	Y	Y
Ulna	Y	Y	Y	Y	Y
Femur	Y	Y	Y	Y	Y
Tibia	Y	Y	Y	Y	Y
Fibula					

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus	Y	Y	Y	Y	Y
Radius	Y	Y	Y	Y	Y
Ulna	Y	Y	Y	Y	Y
Femur	Y	Y	Y	Y	Y
Tibia	Y	Y	Y	Y	Y
Fibula	Y	Y	Y	Y	Y

Right

Bone	>75%	50-75	50-25	<25%
Ilium	Y			
Ischium	Y			
Pubis	Y			
Scapula			Y	
Clavicle	Y			
Patella	Y			
Bone	>75%	50-75	50-25	<25%
Sternum				Y
Coccyx				
Sacrum	Y			

Left

Bone	>75%	50-75	50-25	<25%
Ilium	Y			
Ischium	Y			
Pubis	Y			
Scapula			Y	
Clavicle	Y			
Patella	Y			

Right	1	2	3	4	5
Metacarpals	Y	Y	Y	Y	Y
Metatarsals	Y	Y	Y	Y	Y

Left	1	2	3	4	5
Metacarpals	Y	Y	Y	Y	Y
Metatarsals	Y	Y	Y	Y	Y

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right	Y	Y	Y	Y	Y	Y	Y	Y	
Left	Y	Y	Y	Y	Y	Y	Y	Y	
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right	Y	Y	Y	Y	Y	Y	Y		
Left	Y	Y	Y	Y	Y	Y	Y		

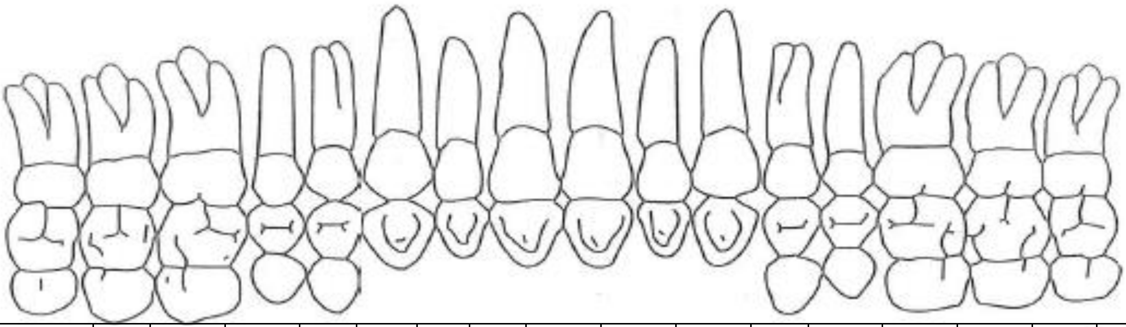
Hand Proximal phalanges 10 Middle phalanges 8 Distal phalanges 10
Foot Proximal phalanges 10 Middle phalanges 7 Distal phalanges 6

Skeleton Number: SKI 1933/128 **Site: Whitehawk Camp**

Dentition

MAXILLARY

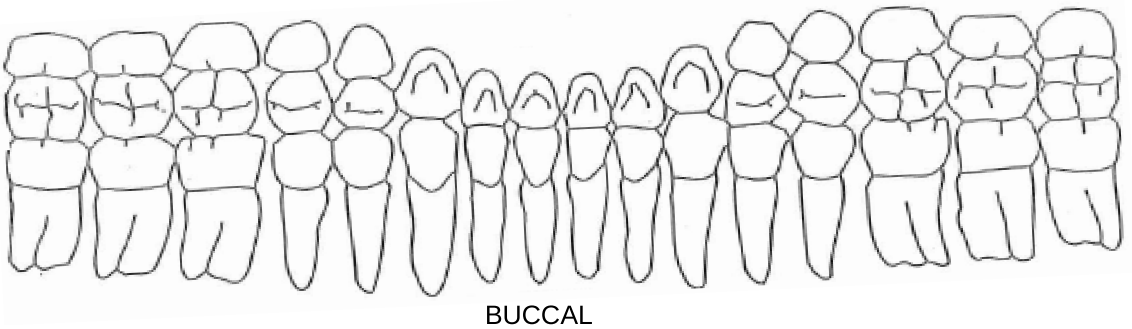
BUCCAL



Present	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Caries																
Calculus	Y	Y			Y	Y	Y					Y	Y	Y	Y	Y
Periodontal disease																
EH																
Wear				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Abscess																
AMTL																
PMTL																

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	**L**
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Present	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
Caries																
Calculus			Y										Y	Y		
Periodontal disease																
EH																
Wear		Y	Y	Y	Y	?	?		?	?	Y	Y	Y	Y	Y	
Abscess																
AMTL																
PMTL								Y								



BUCCAL

MANDIBULAR

Skeleton Number: SKI 1933/128 **Site: Whitehawk Camp**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull		
	L	R		L	R
Ventral arc (1-3)			Nuchal crest (1-5)	2	
Subpubic concavity (1-3)			Supraorbital margin (1-5)	1	1
Ischiopubic ramus ridge (1-3)			Mastoid process (1-5)		
Greater Sciatic Notch (1-5)	F	F	Glabella (1-5)	F	
Preauricular sulcus (1-3)			Jaw shape (1-3)	3	
Overall shape	F		Overall shape	F	
Estimated sex – pelvis	F		Estimated sex - skull	F	

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F	38.22 mm F	38.05 mm F	Humerus:	274 mm	272 mm
Radius Head: >23mm=M, <21mm=F	19.34 mm F	19.74 mm F	Ulna:	c.228 mm	226 mm
Femoral Head: >48mm =M, <42mm=F	38.9 mm F	38.9 mm F	Radius:	207 mm	209 mm
Fem. Bicon. Width: <76mm=M, >74=F	c.67.52 mm F	-	Femur:	375 mm	379 mm
Scap. Glen. width: >28.6mm=M, >26.1mm=F	24.94 mm F	25.99 mm F	Tibia:	319 mm	320 mm
Clav. Max. Length: >150mm=M, <138mm=F	131 mm F	132 mm F	Fibula:	-	307 mm

Age estimation

	Left	Right
Dental eruption & development	________	
Dental attrition	17-35 due to abnormal wear	
Pubic symphysis (Suchey-Brooks)	________	________
Auricular surface	30+	________
Rib-phase	________	________
Unfused joints	________	________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest			Proximal humerus		
Medial clavicle			Distal femur		

List other significant bone development and/or fusion below:

Lambdoid and saggital = minimal fusion

Observation of sacrum & other comments

Skeleton Number: SKI 1933/128 **Site: Whitehawk Camp**

Skeletal Pathology

Photographs

Number	Description
	?Schmorl's nodes to lumbar vertebrae
	Osteoarthritis to lumbar vertebrae
	?cut marks to right femur (?peri-mortem)

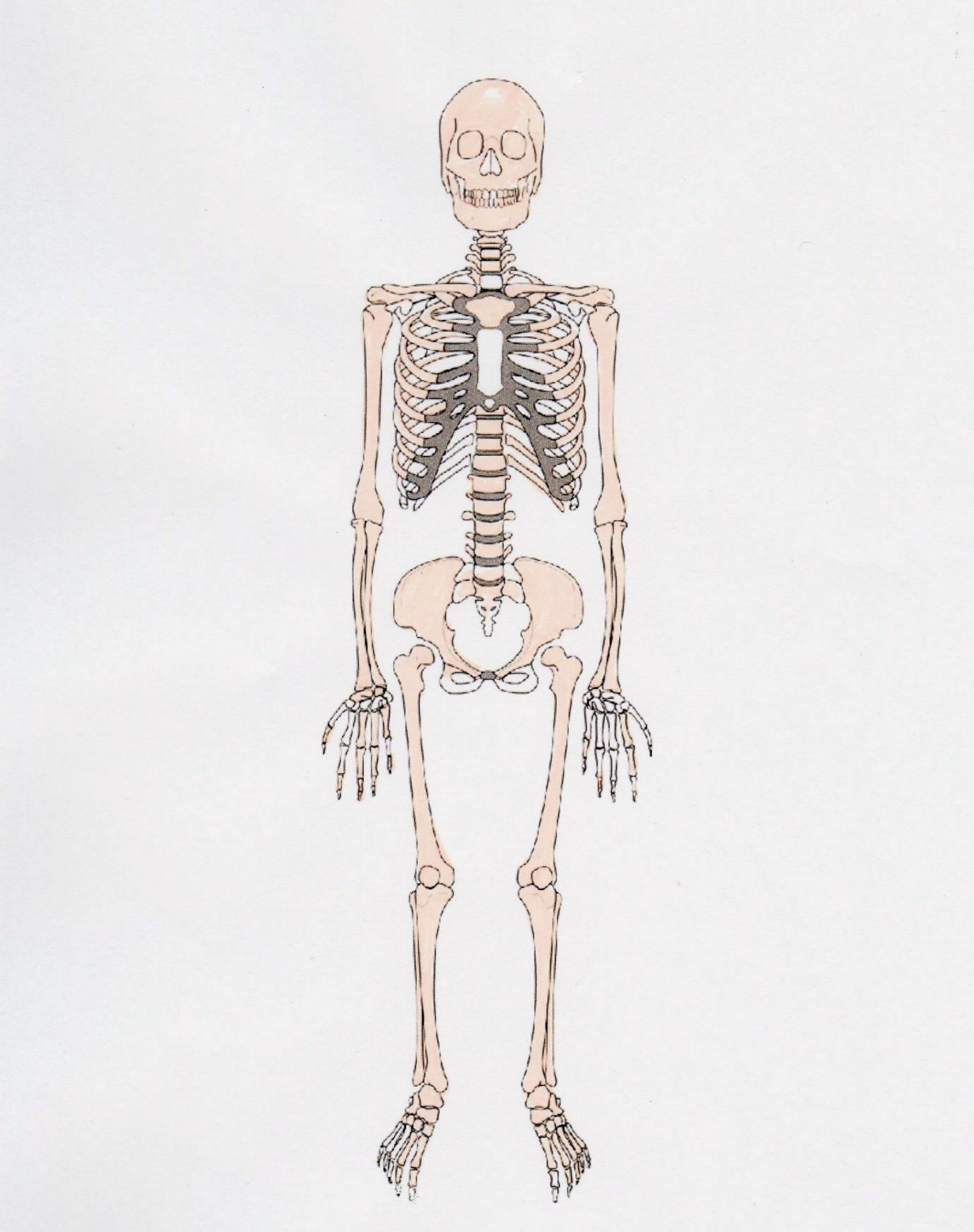
Skeleton Number: SKII R3688/129 & 1933/129 **Site: Whitehawk Camp**

SUMMARY

Sex	Female
Age estimation	18-30 years
Stature (Trotter, 1970)	143.76 cm = 4ft 9in
Significant pathology	
Preservation	Degree of preservation: >75%
Completeness	Degree of completeness: <75-100%
Comments	Found during 1933 excavations in Ditch 3, CIV in a definitive grave surrounded by chalk blocks, some perforated. Grave had been filled up to the top of the blocks. Burial position: semi-prone on its right with head to the south, with the disturbed bones of a neonate around the pelvis. Grave goods: two small pieces of perforated chalk, two fossilised sea urchins and the lower half of the radius of an ox. C14 dated by Archaeology South East (3650-3520 cal BC) <u>Neonate measurements</u>: Femora 73.3 mm & 73.3 mm Tibia 62.37 mm

Date: 25.10.2016 Initials: DC

Skeleton Number: **SKII R3688/129 & 1933/129** **Site: Whitehawk Camp**



Skeleton Number: **SKII R3688/129 & 1933/129** **Site: Whitehawk Camp**

Skeletal Elements

Cranial Bones

Bone	**Right**	**Left**	**Bone**	
Parietal	Y	Y	Frontal	Y
Temporal			Occipital	Y
Maxilla	Y	Y	Sphenoid	Y
Nasal			Vomer	
Zygomatic	Y	Y	Ethmoid	
Lacrimal			Hyoid	
Palatine	Y	Y	Cricoid	
Mandible	Y	Y	Thyroid	

Vertebrae

C1	**Y**	T6	**Y**
C2	Y	T7	Y
C3	Y	T8	Y
C4	Y	T9	Y
C5	Y	T10	Y
C6	Y	T11	Y
C7		T12	Y
T1	Y	L1	Y
T2	Y	L2	Y
T3	Y	L3	Y
T4	Y	L4	Y
T5	Y	L5	Y

Right ribs 13
Left ribs 12

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus	Y	Y	Y	Y	Y
Radius	Y	Y	Y	Y	Y
Ulna	Y	Y	Y	Y	
Femur	Y	Y	Y	Y	Y
Tibia	Y	Y	Y	Y	Y
Fibula	Y	Y	Y	Y	Y

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus	Y	Y	Y	Y	Y
Radius	Y	Y	Y	Y	Y
Ulna	Y	Y	Y	Y	Y
Femur	Y	Y	Y	Y	Y
Tibia	Y	Y	Y	Y	Y
Fibula	Y	Y	Y	Y	

Right

Bone	>75%	50-75	50-25	<25%
Ilium	Y			
Ischium	Y			
Pubis	Y			
Scapula			Y	
Clavicle	Y			
Patella	Y			
Bone	>75%	50-75	50-25	<25%
Sternum			Y	
Coccyx				
Sacrum		Y		

Left

Bone	>75%	50-75	50-25	<25%
Ilium	Y			
Ischium	Y			
Pubis	Y			
Scapula	Y			
Clavicle	Y			
Patella	Y			

Right	1	2	3	4	5
Metacarpals		Y	Y	Y	Y
Metatarsals		Y	Y		

Left	1	2	3	4	5
Metacarpals	Y	Y			
Metatarsals	Y	Y	Y	Y	

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right	Y								
Left									
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right	Y	Y		Y	Y	Y	Y		x1
Left	Y	Y	Y	Y	Y	Y	Y		x2

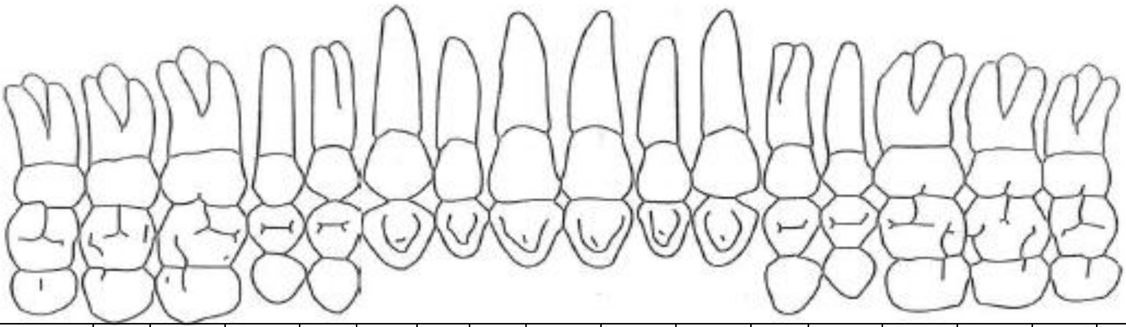
Hand Proximal phalanges _5_ Middle phalanges _5_ Distal phalanges _4_
Foot Proximal phalanges _4_ Middle phalanges _0_ Distal phalanges _2_

Skeleton Number: SKII R3688/129 & 1933/129 **Site: Whitehawk Camp**

Dentition

MAXILLARY

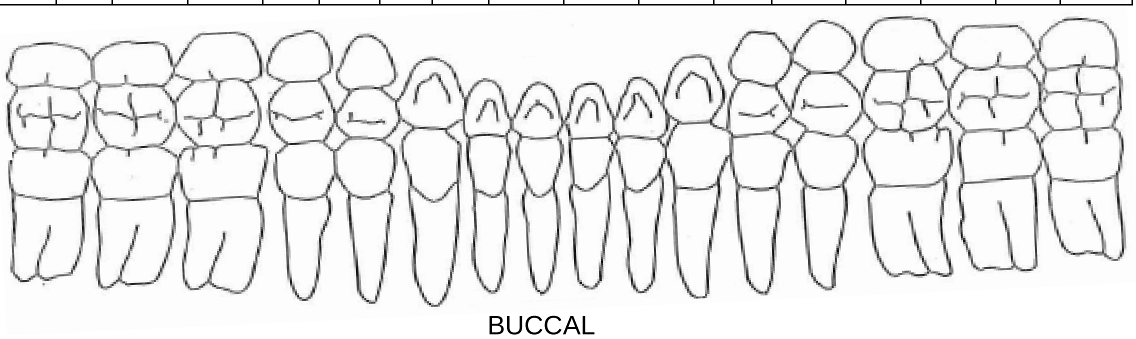
BUCCAL



Present	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y	Y	Y		Y
Caries							Y			Y						Y
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL	Y							Y	Y						Y	

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	**L**
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Present	Y	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y	Y	Y	Y
Caries																
Calculus																
Periodontal disease																
EH																
Wear			Y	Y	Y							Y	Y	Y		
Abscess																
AMTL																
PMTL									Y	Y						



BUCCAL

MANDIBULAR

Skeleton Number: **SKII R3688/129 & 1933/129** **Site: Whitehawk Camp**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull		
R	L	R		L	
Ventral arc (1-3)			Nuchal crest (1-5)	3	
Subpubic concavity (1-3)			Supraorbital margin (1-5)	1/2	
Ischiopubic ramus ridge (1-3)		F	Mastoid process (1-5)	-	2
Greater Sciatic Notch (1-5)	F		Glabella (1-5)	1	
Preauricular sulcus (1-3)			Jaw shape (1-3)	3	
Overall shape			Overall shape		
Estimated sex – pelvis	F		Estimated sex - skull	F	

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F	36.33 mm F	35.75 mm F	Humerus:		271 mm
Radius Head: >23mm=M, <21mm=F	20.55 mm F		Ulna:		
Femoral Head: >48mm =M, <42mm=F			Radius:		
Fem. Bicon. width: <76mm=M, >74=F			Femur:		363 mm
Scap. Glen. width: >28.6mm=M, >26.1mm=F	24.28 mm F	24.17 mm F	Tibia:		308 mm
Clav. Max. Length: >150mm=M, <138mm=F			Fibula:		

Age estimation

	Left	Right
Dental eruption & development	18+	
Dental attrition	25-35	
Pubic symphysis (Suchey-Brooks)	15-24/19-40	____________
Auricular surface	____________	____________
Rib-phase	____________	____________
Unfused joints	____________	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest			Proximal humerus		
Medial clavicle			Distal femur		

List other significant bone development and/or fusion below:

Observation of sacrum & other comments

Skeleton Number: **SKII R3688/129 & 1933/129** **Site: Whitehawk Camp**

Skeletal Pathology

Photographs

Number	Description
	None observed

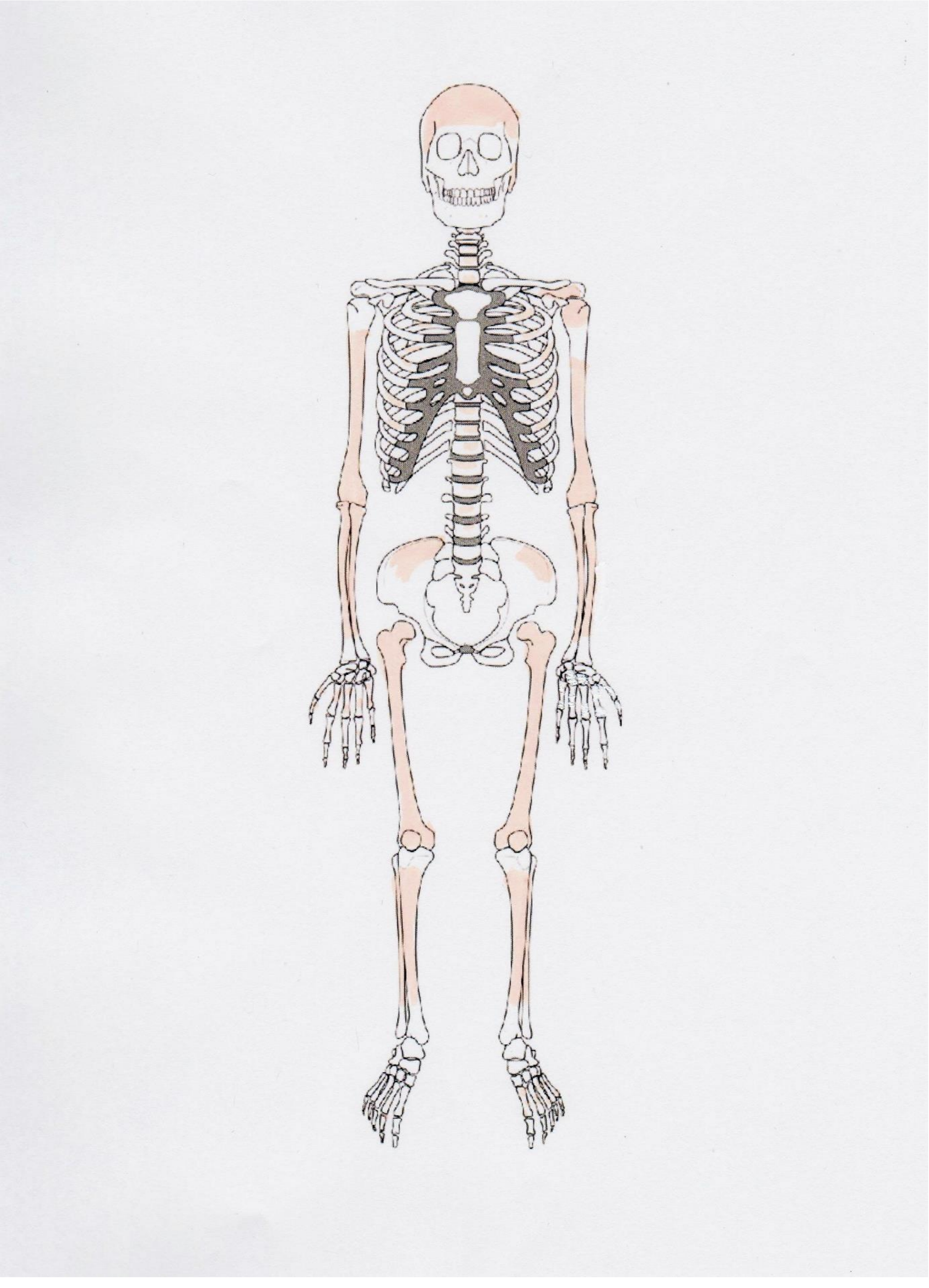
Skeleton Number: SK III 4100 / 1935/139 **Site: Whitehawk Camp**

SUMMARY

Sex	Male?
Age estimation	18-45 years
Stature (Trotter, 1970)	N/A
Significant pathology	None observed
Preservation	Degree of preservation: <25% crumbly
Completeness	Degree of completeness: >25-50%
Comments	Found during excavations in 1935 between the line of the inner ditch and the edge of the second ditch, lying on a surface of undisturbed chalk, covered by 1ft of topsoil. Burial position: Contracted, head to east, face and limbs to north, hands in front of face. Grave goods: 3 x sherds of Neolithic pottery, large quantity of land molluscs, 2 or 3 mussel shells.

Date: 25.10.2016 Initials: DC

Skeleton Number: SK III 4100 / 1935/139 **Site: Whitehawk Camp**



Skeleton Number: SK III 4100 / 1935/139 **Site: Whitehawk Camp**

Skeletal Elements

Cranial Bones

Bone	**Right**	**Left**	**Bone**	
Parietal			Frontal	Y
Temporal			Occipital	Y
Maxilla			Sphenoid	
Nasal			Vomer	
Zygomatic			Ethmoid	
Lacrimal			Hyoid	
Palatine			Cricoid	
Mandible			Thyroid	

R ribs x 5 frags
L ribs x 6 frags
+unsided frags

Vertebrae x 55 frags

C1		T6	
C2		T7	
C3		T8	
C4		T9	
C5		T10	
C6		T11	
C7		T12	
T1		L1	
T2		L2	
T3		L3	
T4		L4	
T5		L5	

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus		Y	Y	Y	Y
Radius	Y	Y	Y	Y	
Ulna	Y	Y	Y	Y	
Femur	Y	Y	Y	Y	Y
Tibia		Y	Y	Y	Y?
Fibula		Y	Y	Y	

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus	Y		Y	Y	Y
Radius	Y	Y	Y	Y	
Ulna	Y	Y	Y	Y	
Femur	Y	Y	Y	Y	Y
Tibia		Y	Y	Y	
Fibula		Y	Y	Y	

Right

Bone	>75%	50-75	50-25	<25%
Ilium				Y
Ischium				
Pubis				
Scapula				
Clavicle				
Patella	Y			
Bone	>75%	50-75	50-25	<25%
Sternum				
Coccyx				
Sacrum				

Left

Bone	>75%	50-75	50-25	<25%
Ilium				Y
Ischium				
Pubis				
Scapula			Y	
Clavicle				
Patella	Y			

Right	1	2	3	4	5
Metacarpals	13x unsided metacarpal frags				
Metatarsals					

Left	1	2	3	4	5
Metacarpals	15x unsided metatarsal frags				
Metatarsals					

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right									
Left		Y					Y		
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right									
Left									

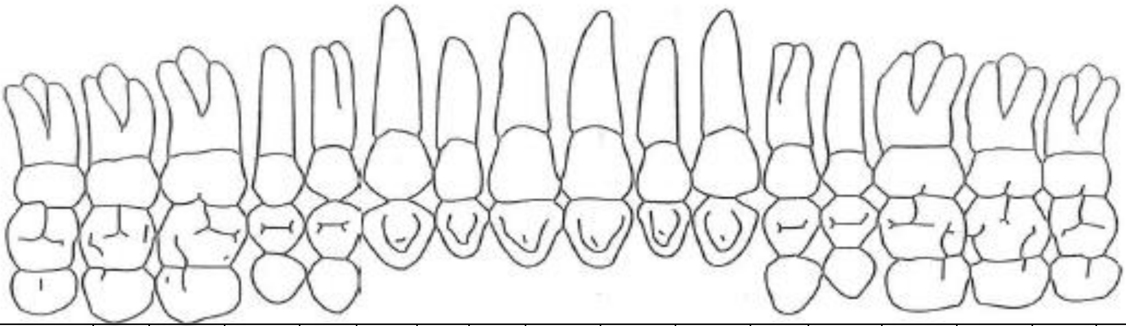
Hand Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___ unidentified fragments only
Foot Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___ unidentified fragments only

Skeleton Number: SK III 4100 / 1935/139 **Site: Whitehawk Camp**

Dentition

MAXILLARY

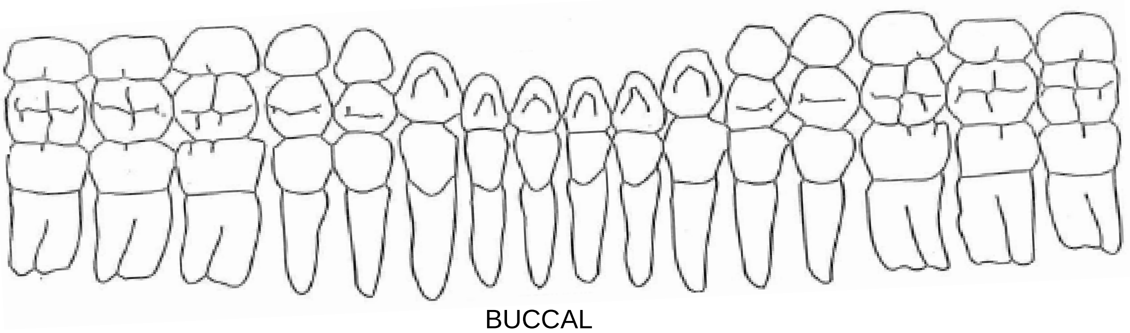
BUCCAL



Present			Y	Y	Y			Y						Y	Y	Y
Caries																
Calculus																
Periodontal disease																
EH																
Wear			Y	Y	Y			Y						Y	Y	Y
Abscess																
AMTL																
PMTL																

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	L
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Present	Y	Y	Y	Y	Y	Y	Y							Y	Y	Y
Caries																
Calculus																
Periodontal disease																
EH																
Wear	Y	Y		Y	Y	Y	Y								Y	Y
Abscess																
AMTL																
PMTL																



BUCCAL

MANDIBULAR

Plus: 3 x premolars and 3 x incisors

Skeleton Number: SK III 4100 / 1935/139 **Site: Whitehawk Camp**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis	L	R	Skull	L	R
Ventral arc (1-3)	-	-	Nuchal crest (1-5)	-	-
Subpubic concavity (1-3)	-	-	Supraorbital margin (1-5)	-	-
Ischiopubic ramus ridge (1-3)	-	-	Mastoid process (1-5)	3/4	
Greater Sciatic Notch (1-5)	-	-	Glabella (1-5)	-	
Preauricular sulcus (1-3)	-	-	Jaw shape (1-3)	-	
Overall shape	-		Overall shape	-	
Estimated sex – pelvis	-		Estimated sex - skull	M?	

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F			Humerus:		
Radius Head: >23mm=M, <21mm=F			Ulna:		
Femoral Head: >48mm =M, <42mm=F			Radius:		
Fem. Bicon. width: <76mm=M, >74=F		c.81.71 (M)	Femur:	c.480 mm	
Scap. Glen. width: >28.6mm=M, >26.1mm=F		28.76(M)	Tibia:		
Clav. Max. Length: >150mm=M, <138mm=F	c.138 mm		Fibula:		

Age estimation

Dental eruption & development	18+	
Dental attrition	25-35/35-45	
	Left	Right
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	____________	____________
Rib-phase	____________	____________
Unfused joints	____________	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest			Proximal humerus		
Medial clavicle			Distal femur		

List other significant bone development and/or fusion below:

Observation of sacrum & other comments

Skeletal Pathology

Photographs

Number	Description

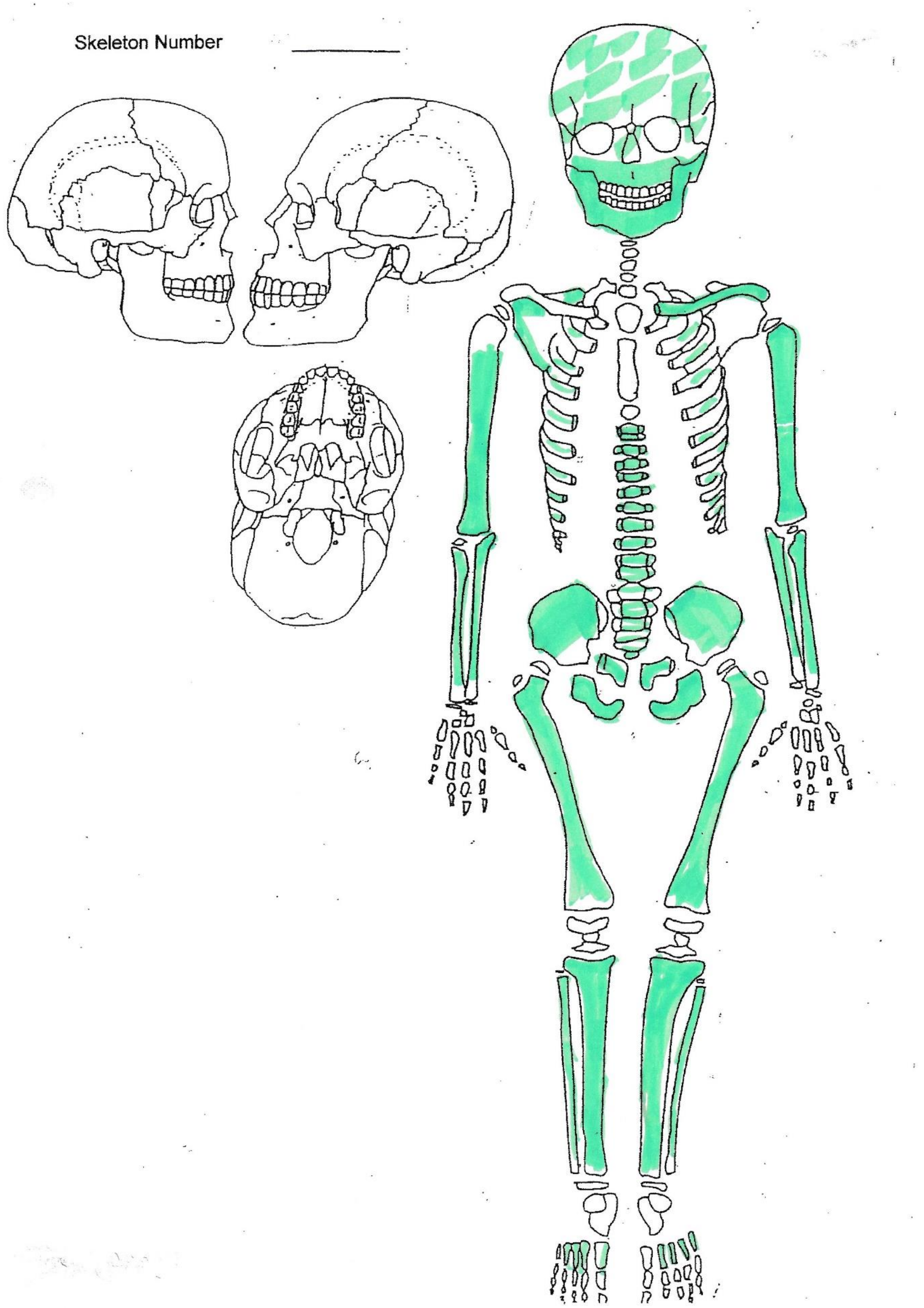
Skeleton Number: SKIV R4100/140 **Site: Whitehawk**

SUMMARY

Sex	N/A
Age estimation	7-12 years
Stature (Trotter, 1970)	N/A
Significant pathology	
Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%_√_ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%_√_ 75%__
Comments	Found during excavations at Whitehawk Camp in 1935. In the fine grey chalky filling of Hole 51, at a depth of nearly 2ft below the general level of the chalk, and 2ft above the bottom of the hole, the skeleton of a child was discovered, lying curled-up with head to the south, face and limbs to the east. Three or four sherds of Neolithic pottery in association and a piece of chalk with incised lines a few inches above.

Date: 25.10.2016 Initials: DC

Skeleton Number: SKIV R4100/140 **Site: Whitehawk**



Skeleton Number: SKIV R4100/140 **Site: Whitehawk**

Skeleton Number IV Juvenile Skeletal Inventory

47x skull fragments

Bone	Right	Left	Bone	
Parietal			Frontal	
Temporal			Occipital	
Maxilla	✓	✓	Pars Basillaris	
Nasal			Ethmoid	
Zygomatic			Spenoid	
Lacrimal			Fontanelle	
Palatine	✓	✓	Hyoid	
Mandible	✓	✓	Atlas	
Pars Lateralis			Axis	

Bone	No. Bodies	No. right arches	No. left arches
Cervical			
Thoracic			
Lumbar			
Sacrum			
Bone	**Right**	**Left**	
Rib	10	11	
Sternum	No. of Sternebrae =		
	+36x unsided rib frags.		

Right

Bone	Prox. Epiph.	P 1/3	M 1/3	D 1/3	Dist. Epiph.
Humerus			✓	✓	\
Radius		✓	✓		
Ulna		✓	✓		
Femur	\	✓	✓	\	
Tibia		✓	✓	✓	
Fibula			✓	✓	

Left

Bone	Prox. Epiph.	P 1/3	M 1/3	D 1/3	Dist. Epiph.
Humerus	✓	✓	✓	✓	\
Radius	\	✓	✓	\	
Ulna	✓	✓	✓		
Femur	✓	✓	✓	✓	\
Tibia	✓	✓	✓	✓	
Fibula	✓	✓	✓		

Right

Bone	> 75%	75–50	50–25	<25%
Ilium		✓		
Ischium				
Pubis			✓	
Scapula				✓
Clavicle				✓
Patella				

Left

Bone	> 75%	75–50	50–25	<25%
Ilium			✓	
Ischium				
Pubis			✓	
Scapula				✓
Clavicle	✓			
Patella				

Bones	Number	Bones	Number
Metacarpals		Carpals	
Metatarsals	8	Tarsals	
Hand phalanges		Foot phalanges	

Other unfused bone elements present	Age of fusion
L. humerus prox (+ distal?)	14-21
R. femur dist	14-19
L. tibia dist	14-18
R+L femur prox	13-18
" trochanters	13-18
R. clavicle	17-22
L. fibula prox	14-20

60

Skeleton Number: SKIV R4100/140 **Site: Whitehawk**

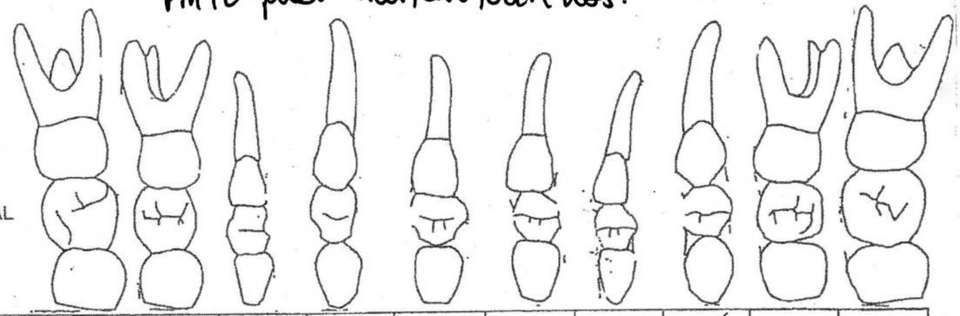
Dentition

U = unerupted ✓ = present
PMTL = post-mortem tooth loss.

BUCCAL

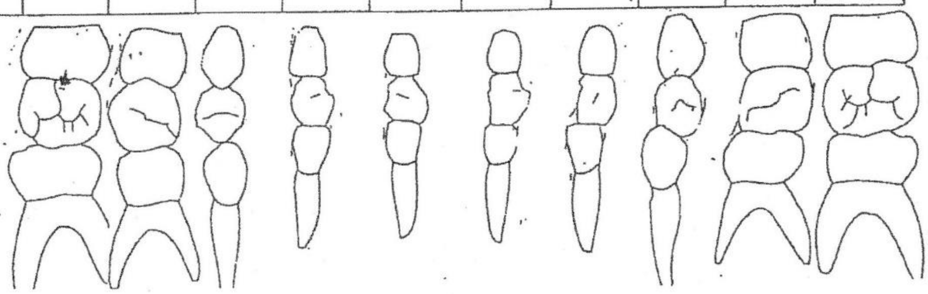
OCCLUSAL

LINGUAL



Right	51	52	53	54	55	56	57	58	59	60	Left
~~Caries~~ U	✓	✓	PMTL	PMTL		U	✓	✓	✓	✓	U
Calculus											
Periodontal Disease											
EH											
Wear											
Abscess											
Unerupted/ erupting observable											

Right	70	69	68	67	66	65	64	63	62	61	Left
Unerupted/ erupting observable											
~~Caries~~ U	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	U
Calculus											
Periodontal Disease											
EH											
Wear											
Abscess											



Page ___ of ___

Skeleton Number SK IV Whitehawk

Sheet S

Metric Data (4 - 15 years)

Skull

No.	*Measurement*	
1	Maximum length	
2	Maximum biparìatal breadth	
4	Basi-bregmatic height	
5	Basi-nasal length	
19	Frontal chord	
20	Parietal chord	
21	Occipital chord	
13	Nasal height	
15	Orbital breadth	
8	Palate length	

Mandible

No.	*Measurement*	
25	Chin height	
28	Bigonial width	
29	Bicondylar breadth	
30	Minimum ramus breadth	
31	Maximum ramus breadth	
32	Maximum ramus height	
33	Mandibular length	
34	Mandibular angle	

Post Cranial Skeleton

Measurement		L	R	Measurement		L	R
9a	Clavicle length	c.83MM		15 b	Ulna diameter		
9b	Clavicle diameter AP S	70MM 52MM		16 a	Radius length		
11 a	Ilium length			16 b	Radius diameter		
11 b	Ilium width			17 a	Femur length	c.248MM	
12 a	Ischium length			61	Bicondylar length		
12 b	Ischium width			62	Epicondylar breadth		
13	Pubis length			63	Head diameter		
14 a	Humerus length			18 a	Tibia length	c. 208MM	
14 b	Humerus width			18 b	Tibia diameter		
14 c	Humerus diameter Mid-shaft	11.53 Max 9.34 Min		74	Circ. at nutrient foramen		
15 a	Ulna length			19 a	Fibula length		

Comments

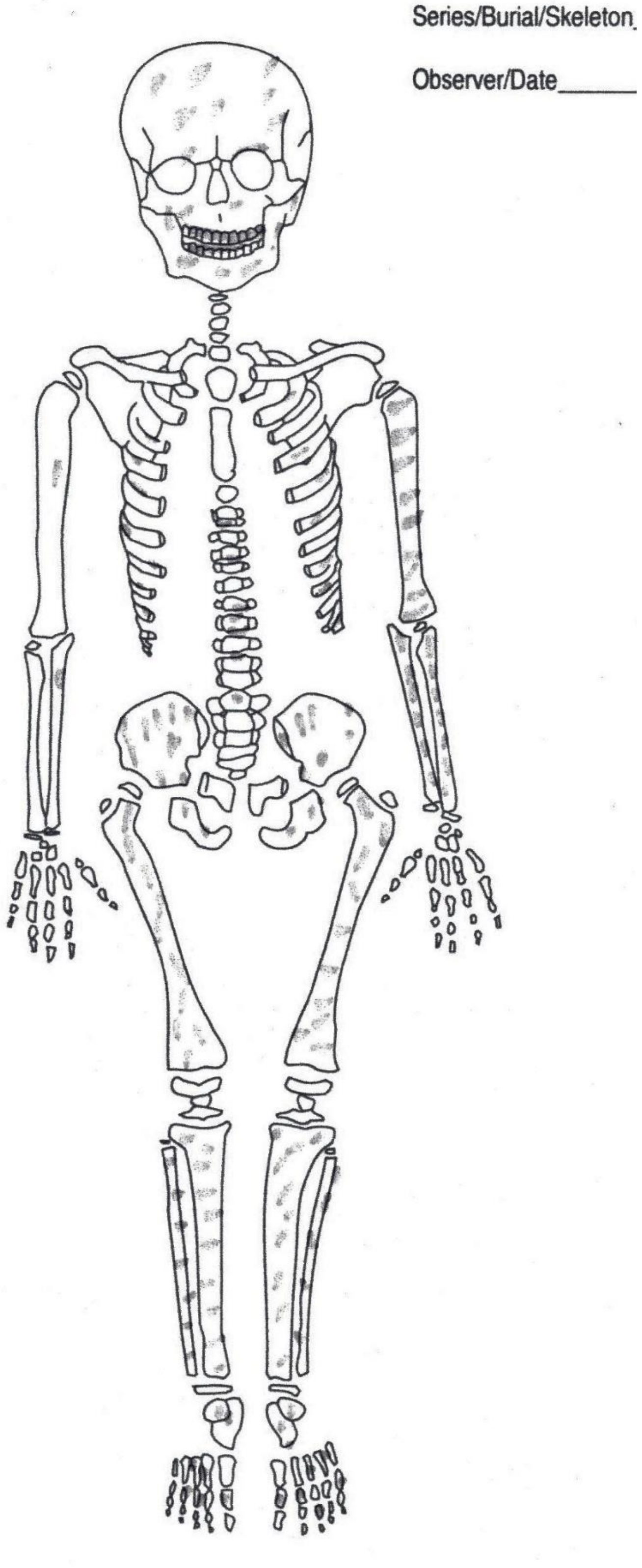
Skeleton Number: 2814 **Site: Itchen Farm**

SUMMARY

Sex	N/A
Age estimation	4-6 years
Stature (Trotter, 1970)	N/A
Significant pathology	Cribra orbitalia
Preservation	Degree of preservation: <25%_√_ 25-50%__ up to 75%__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%_√_ 75%__
Comments	Excavated in 2007 by Thames Valley Archaeological Services. Found in a flat grave, described as 'crouched', orientated east-to-west on right side. All bones fragmentary.

Date: 12.09.2017 Initials: DC

Skeleton Number: 2814 **Site: Itchen Farm**



Skeleton Number: 2814 **Site: Itchen Farm**

Skeleton Number 2814 SK3567 Juvenile Skeletal Inventory
Itchen Farm

Bone	Right	Left	Bone	
Parietal			Frontal	
Temporal			Occipital	
Maxilla	several		Pars Basillaris	
Nasal	hundred		Ethmoid	
Zygomatic			Spenoid	
Lacrimal	fragments		Fontanelle	
Palatine			Hyoid	
Mandible	✓		Atlas	
Pars Lateralis			Axis	

Bone	No. Bodies	No. right arches	No. left arches
Cervical	fragments		
Thoracic			
Lumbar			
Sacrum			
Bone	Right	Left	
Rib	fragments		
Sternum	No. of Sternebrae =		

Right

Bone	Prox. Epiph.	P 1/3	M 1/3	D 1/3	Dist. Epiph.
Humerus					
Radius					
Ulna					
Femur	40x fragments				
Tibia	30x fragments				
Fibula					

Left

Bone	Prox. Epiph.	P 1/3	M 1/3	D 1/3	Dist. Epiph.
Humerus	11x fragments				
Radius	28x fragments				
Ulna					
Femur	x fragments				
Tibia	70x fragments				
Fibula					

80+ pelvis frags.

Right

Bone	> 75%	75–50	50–25	<25%
Ilium				
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Left

Bone	> 75%	75–50	50–25	<25%
Ilium				
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Bones	Number	Bones	Number
Metacarpals		Carpals	
Metatarsals	14x foot fragments	Tarsals	
Hand phalanges		Foot phalanges	

Other unfused bone elements present

Skeleton Number: 2814 **Site: Itchen Farm**

Skeletal Pathology

Photographs

Number	Description
	Cribra orbitalia

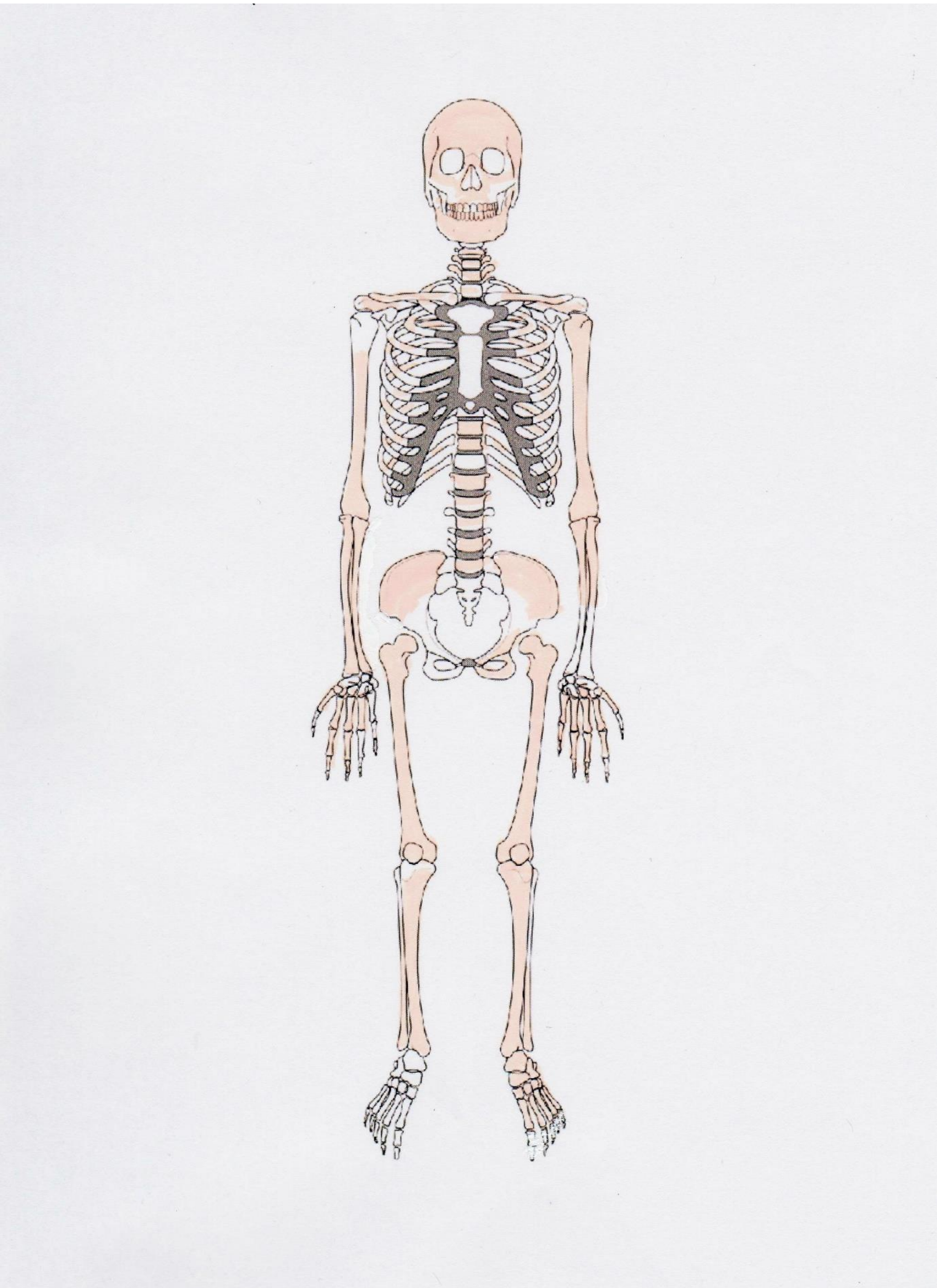
Skeleton Number: 1 (north-east) **Site: Nutbane**

SUMMARY

Sex	Male
Age estimation	25-35 years
Stature (Trotter, 1970)	173.98 cm = 5ft 7in (originally assessed as 5ft 9in)
Significant pathology	OA to lumbar vertebrae
Preservation	Degree of preservation: >75%
Completeness	Degree of completeness: >75%
Comments	Held in Hampshire Cultural Trust store, Winchester. Excavated in 1959, report in Proceedings of the Prehistoric Society vol 25 1959 'Excavation of a Long Barrow at Nutbane', 15-51, F de Mallet Morgan. Human remains recently catalogued by HCT osteoarchaeologist. Research previously carried out on left foot by Phyllis Jackson for article in Current Archaeology (8 June 2007) regarding foot anomalies through the ages https://www.archaeology.co.uk/articles/features/footloose-in-archaeology.htm Buried in crouched position, above layer of wood, orientated E-W, lying on left, skull facing backwards. Bone very taphonomised, crumbly. Skull reconstructed with glue and masking tape. Mike Parker Pearson possibly carrying out radiocarbon dating 2016. Researcher from Leicester University looking at faunal remains 2016.

Date: 02.06.2016 & 06.10.2016 Initials: DC

Skeleton Number: 1 (north-east) **Site: Nutbane**



Skeleton Number: 1 (north-east) **Site: Nutbane**

Skeletal Elements

Cranial Bones

Bone	Right	Left	Bone	
Parietal	Y	Y	Frontal	Y
Temporal	Y	Y	Occipital	Y
Maxilla	Y	Y	Sphenoid	
Nasal	Y	Y	Vomer	
Zygomatic	Y	Y	Ethmoid	
Lacrimal			Hyoid	
Palatine	Y	Y	Cricoid	
Mandible	Y	Y	Thyroid	

X 27 unsided

Right ribs: 3

Left ribs: 3

Vertebrae

C1	X 4?	T6	
C2		T7	
C3		T8	
C4		T9	
C5		T10	
C6		T11	
C7		T12	
T1	X 6?	L1	Y
T2		L2	Y
T3		L3	Y
T4		L4	Y
T5		L5	Y

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus			Y	Y	Y
Radius	Y	Y	Y	Y	Y
Ulna	Y	Y	Y	Y	Y
Femur	Y	Y	Y	Y	Y
Tibia		Y	Y	Y	Y
Fibula	Y	Y	Y	Y	

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus	Y	Y	Y	Y	Y
Radius	Y	Y	Y		
Ulna	Y	Y	Y		
Femur	Y	Y	Y	Y	Y
Tibia	Y	Y	Y	Y	Y
Fibula			Y	Y	Y

Right

Bone	>75%	50-75	50-25	<25%
Ilium			Y	
Ischium				
Pubis				
Scapula			Y	
Clavicle	Y			
Patella	Y			

Left

Bone	>75%	50-75	50-25	<25%
Ilium			Y	
Ischium				
Pubis				
Scapula			Y	
Clavicle	Y			
Patella	Y			

Bone	>75%	50-75	50-25	<25%
Sternum				
Coccyx				
Sacrum				

Right	1	2	3	4	5
Metacarpals	Y	Y	Y	Y	
Metatarsals					

Left	1	2	3	4	5
Metacarpals	Y	Y	Y	Y	Y
Metatarsals	Y	Y	Y	Y	

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right									
Left					Y?				
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right									
Left	Y	Y	Y	Y	Y		Y		

Hand Proximal phalanges _6_ Middle phalanges _5_ Distal phalanges _0_

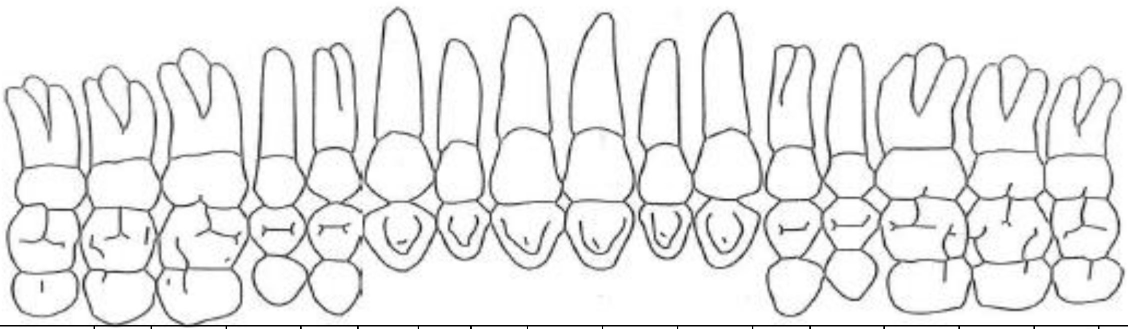
Foot Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___

Skeleton Number: 1 (north-east) **Site: Nutbane**

Dentition

MAXILLARY

BUCCAL



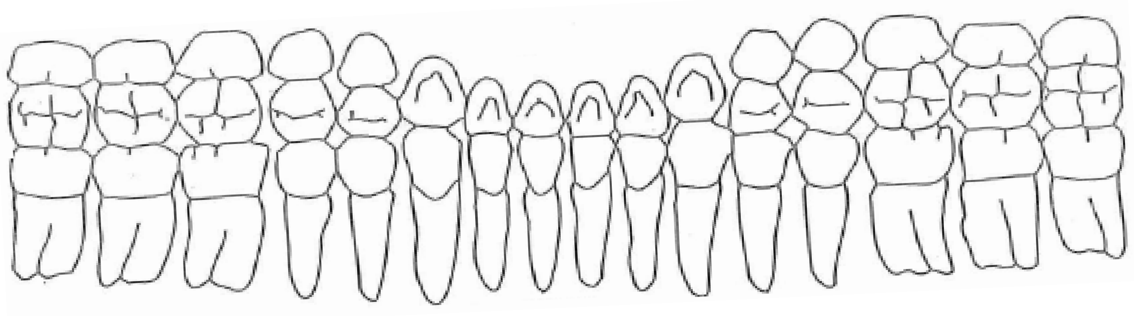
Present	Y	Y	Y	Y	Y	Y	*	*	*	Y	Y	Y	Y	Y	Y	Y
Caries																
Calculus																
Periodontal disease																
EH																
Wear			Y	Y	Y	Y								Y		
Abscess																
AMTL							Y	Y	Y							
PMTL																

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	**L**
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Present	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y
Caries																
Calculus																
Periodontal disease																
EH																
Wear			Y	Y	Y									Y		
Abscess																
AMTL																
PMTL									Y							

NB - Teeth previously glued together; some partially observable

*Original report interprets missing maxillary median incisors as possibly deliberately extracted in life



BUCCAL

MANDIBULAR

Skeleton Number: 1 (north-east) **Site: Nutbane**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis	L	R	Skull	L R
Ventral arc (1-3)			Nuchal crest (1-5)	4
Subpubic concavity (1-3)			Supraorbital margin (1-5)	4
Ischiopubic ramus ridge (1-3)			Mastoid process (1-5)	4
Greater Sciatic Notch (1-5)		M	Glabella (1-5)	4
Preauricular sulcus (1-3)			Jaw shape (1-3)	3
Overall shape			Overall shape	M
Estimated sex – pelvis			Estimated sex - skull	M

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F	-	43 mm	Humerus:	-	335 mm
Radius Head: >23mm=M, <21mm=F	23 mm	20 mm (F)	Ulna:	-	-
Femoral Head: >48mm =M, <42mm=F	48 mm	47 mm	Radius:	258 mm	-
Fem. Bicon. width: <76mm=M, >74=F	82 mm (M)	78 mm (M)	Femur:	-	473 mm
Scap. Glen. width: >28.6mm=M, >26.1mm=F	23 mm (F)	27 mm	Tibia:	-	-
Clav. Max. Length: >150mm=M, <138mm=F	-	-	Fibula:	-	-

Age estimation

	Left	Right
Dental eruption & development	18+	
Dental attrition	25-35 years	
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	____________	____________
Rib-phase	____________	____________
Unfused joints	None	None

	fused	unfused		fused	unfused
Inferior angle of scapula	Y		Proximal tibia	Y	
Tip of coracoids			Vertebral end plates	Y	
Ramal epiphysis	Y		Distal radius	Y	
Iliac crest	Y		Proximal humerus	Y	
Medial clavicle	Y		Distal femur	Y	

List other significant bone development and/or fusion below:

Observation of sacrum & other comments

Skeleton Number: 1 (north-east) **Site: Nutbane**

Skeletal Pathology

Photographs

Number	Description
	OA to lumbar vertebrae

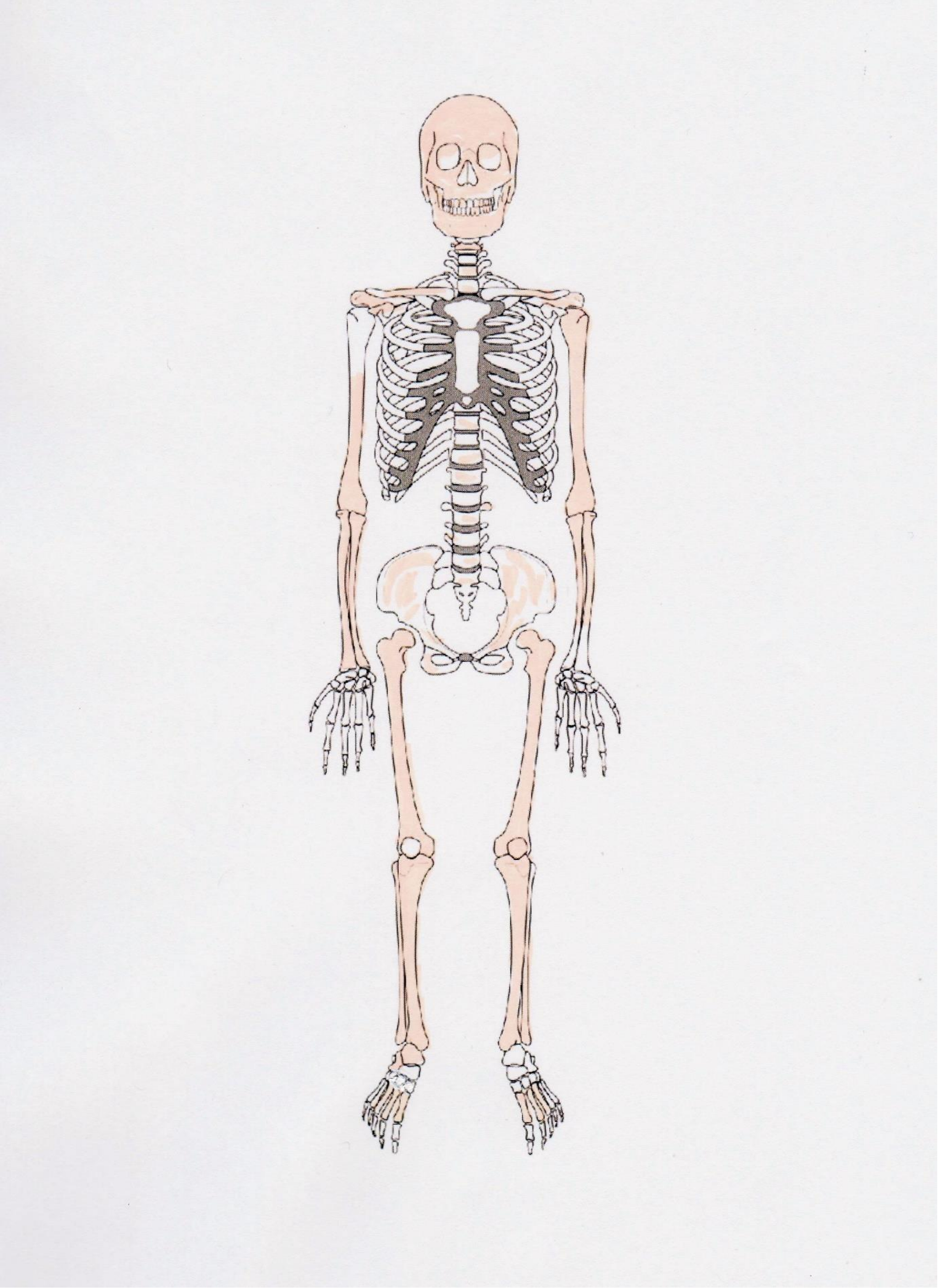
Skeleton Number: 2 (south-east) **Site: Nutbane**

SUMMARY

Sex	Male?
Age estimation	45+ years
Stature (Trotter, 1970)	170.18 cm +/- 3.27 = 5ft 7in (originally 5ft 6½in)
Significant pathology	None observed
Preservation	Degree of preservation: up to 50%
Completeness	Degree of completeness: 75%
Comments	Held in Hampshire Cultural Trust store, Winchester. Excavated in 1959, report in Proceedings of the Prehistoric Society vol 25 1959 'Excavation of a Long Barrow at Nutbane', 15-51, F de Mallet Morgan. Human remains recently catalogued by HCT osteoarchaeologist. Buried above layer of wood in crouched position, orientation east-west, lying on left. One of the patellae found inside skull, thought to be post-mortem disturbance. Right forearm disarticulated. Very small fragments of Windmill Hill pottery in soil, part of antler tine in the chalk and soil layer. Two large fragments of Bos primigenius (auroch) metatarsal in chalk at east end of cairn.

Date: 02.06.2016 & 06.10.2016 Initials: DC

Skeleton Number: 2 (south-east) **Site: Nutbane**



Skeleton Number: 2 (south-east) **Site: Nutbane**

Skeletal Elements

Cranial Bones

Bone	**Right**	**Left**	**Bone**	
Parietal	Y	Y	Frontal	Y
Temporal	Y	frag	Occipital	Y
Maxilla	Y	Y	Sphenoid	frag
Nasal	frag	frag	Vomer	
Zygomatic	Y		Ethmoid	
Lacrimal			Hyoid	
Palatine	Y	Y	Cricoid	
Mandible	Y	Y	Thyroid	

Vertebrae – c.27 x small frags inc cerv

C1		T6	
C2	Y	T7	
C3		T8	
C4		T9	
C5		T10	
C6		T11	
C7		T12	
T1		L1	
T2		L2	
T3		L3	
T4		L4	
T5		L5	

Right ribs 0

Left ribs 0

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus			Y	Y	Y
Radius	Y	Y	Y	Y	Y
Ulna	Y	Y	Y	Y	Y
Femur	Y	Y	Y	Y	Y
Tibia		Y	Y	Y	Y
Fibula	Y	Y	Y	Y	

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus	Y	Y	Y	Y	Y
Radius	Y	Y	Y		
Ulna	Y	Y	Y		
Femur	Y	Y	Y	Y	Y
Tibia	Y	Y	Y	Y	Y
Fibula			Y	Y	Y

+Fragmentary innominate bones

Right

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula			Y	
Clavicle	Y			
Patella				
Bone	>75%	50-75	50-25	<25%
Sternum				
Coccyx				
Sacrum				

Left

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula				Y
Clavicle			Y	
Patella	Y			

Right	1	2	3	4	5
Metacarpals		Y	Y	Y	
Metatarsals	Y	Y	Y		

Left	1	2	3	4	5
Metacarpals	Y	Y	Y	Y	
Metatarsals	Y	Y	Y		

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right	Y	Y	Y		Y			Y	
Left									
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right	Y	Y							
Left									

Hand Proximal phalanges 7 Middle phalanges 1 Distal phalanges 2

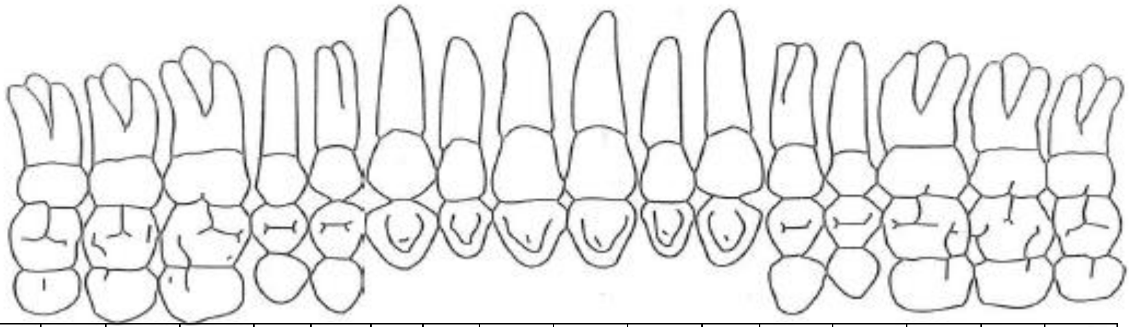
Foot Proximal phalanges 0 Middle phalanges 0 Distal phalanges 0

Skeleton Number: 2 (south-east) **Site: Nutbane**

Dentition

MAXILLARY

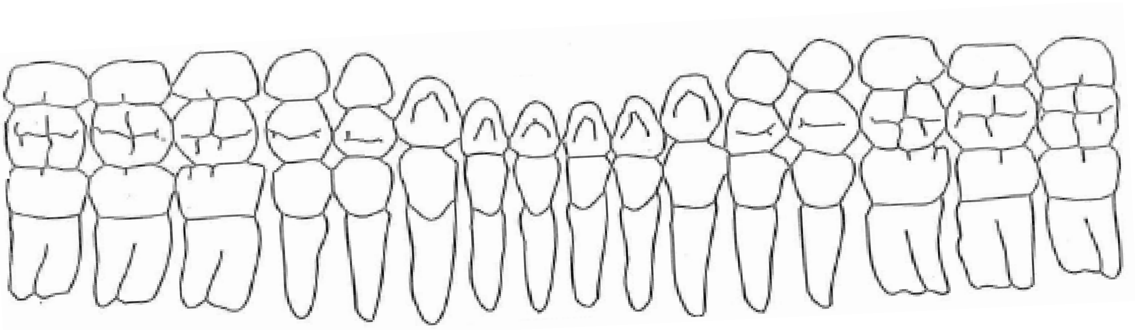
BUCCAL



	R 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 L
Present		Y	Y		Y		Y							Y	Y	
Caries																
Calculus																
Periodontal disease																
EH																
Wear		Y	Y		Y		Y									
Abscess																
AMTL						Y		Y	Y							
PMTL	Y?			Y						Y	Y	Y	Y			Y?

	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
Present	Y							Y		Y	Y	Y				
Caries																
Calculus																
Periodontal disease																
EH																
Wear	Y									Y	Y	Y				
Abscess																
AMTL		Y?	Y?										Y	Y	Y	Y
PMTL				Y	Y	Y	Y		Y							

All teeth worn very flat, most exhibiting angular wear; maxilla poorly reconstructed previously



BUCCAL

MANDIBULAR

Skeleton Number: 2 (south-east) **Site: Nutbane**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull	
L R R			L	
Ventral arc (1-3)			Nuchal crest (1-5)	2/3
Subpubic concavity (1-3)			Supraorbital margin (1-5)	3/4
Ischiopubic ramus ridge (1-3)			Mastoid process (1-5)	3/4
Greater Sciatic Notch (1-5)			Glabella (1-5)	2
Preauricular sulcus (1-3)			Jaw shape (1-3) mental eminence	2/3
Overall shape			Overall shape	
Estimated sex – pelvis			Estimated sex - skull	F?

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F	-	c.45 mm	Humerus:	-	320 mm
Radius Head: >23mm=M, <21mm=F	22 mm	20 mm (F)	Ulna:	254 mm	-
Femoral Head: >48mm =M, <42mm=F	-	47 mm	Radius:	235 mm	-
Fem. Bicon. width: <76mm=M, >74=F	-	79 mm (M)	Femur:		457 mm
Scap. Glen. width: >28.6mm=M, >26.1mm=F	29 mm (M)	28 mm	Tibia:		-
Clav. Max. Length: >150mm=M, <138mm=F	-	-	Fibula:		-

Age estimation

Dental eruption & development 18+ yrs
Dental attrition 45+ yrs

	Left	Right
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	____________	____________
Rib-phase	____________	____________
Unfused joints	____________	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest			Proximal humerus		
Medial clavicle			Distal femur		

List other significant bone development and/or fusion below:
Lambdoid suture unfused
Observation of sacrum & other comments

Skeleton Number: 2 (south-east) **Site: Nutbane**

Skeletal Pathology

Photographs

Number	Description
	None observed

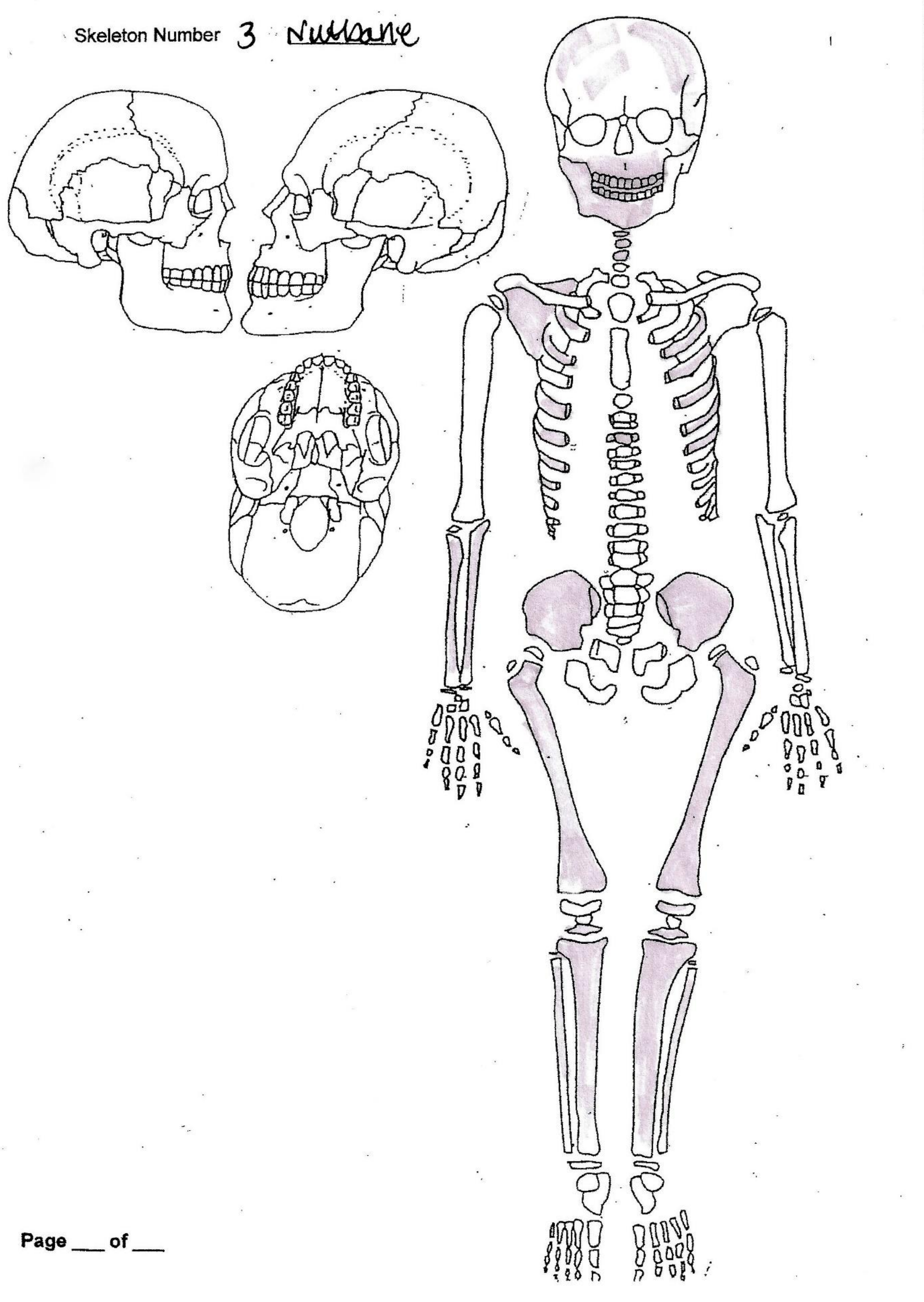
Skeleton Number: 3 (juvenile) **Site: Nutbane**

SUMMARY

Sex	N/A
Age estimation	12-13 years
Stature (Trotter, 1970)	N/A
Significant pathology	
Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%__ >75%__
Comments	Found during excavations at Nutbane long barrow in 1959. Described as being in a 'crouched' burial position.

Date: 17.06.2016 Initials: DC

Skeleton Number: 3 (juvenile) **Site: Nutbane**



Skeleton Number: 3 (juvenile) **Site: Nutbane**

Skeleton Number 3 Nutbane Juvenile Skeletal Inventory

Skull fragmentary

Bone	Right	Left	Bone	
Parietal	\	\	Frontal	\
Temporal			Occipital	\
Maxilla			Pars Basillaris	
Nasal			Ethmoid	
Zygomatic			Spenoid	
Lacrimal			Fontanelle	
Palatine	✓	✓	Hyoid	
Mandible	✓	\	Atlas	✓
Pars Lateralis			Axis	

Bone	No. Bodies	No. right arches	No. left arches
Cervical	2		
Thoracic	1?		
Lumbar			
Sacrum			
Bone	**Right**	**Left**	
Rib			11 frags
Sternum	No. of Sternebrae =		

Right

Bone	Prox. Epiph.	P 1/3	M 1/3	D 1/3	Dist. Epiph.
Humerus					
Radius					
Ulna					
Femur		✓	✓	✓	
Tibia	– frags				
Fibula					

Left

Bone	Prox. Epiph.	P 1/3	M 1/3	D 1/3	Dist. Epiph.
Humerus					
Radius					
Ulna					
Femur	✓	✓	✓	✓	✓?
Tibia	– frags				
Fibula					

Right

Bone	> 75%	75–50	50–25	<25%
Ilium			✓	
Ischium				
Pubis				
Scapula				✓
Clavicle				✓
Patella				

Left

Bone	> 75%	75–50	50–25	<25%
Ilium			✓	
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Bones	Number	Bones	Number
Metacarpals		Carpals	
Metatarsals		Tarsals	
Hand phalanges		Foot phalanges	

1x foot bone

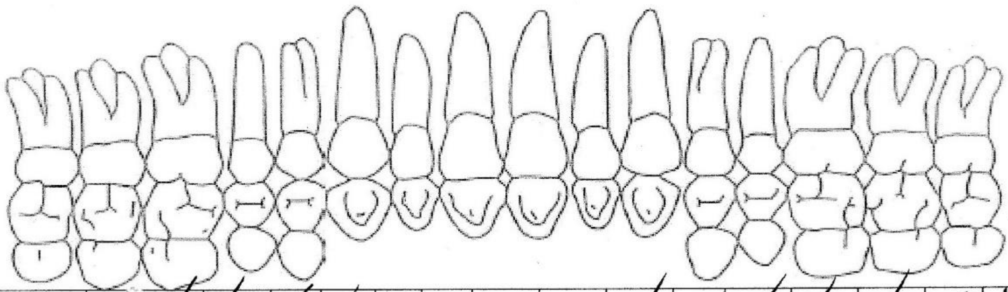
Other unfused bone elements present

R+L distal femur (?)

Skeleton Number: 3 (juvenile) **Site: Nutbane**

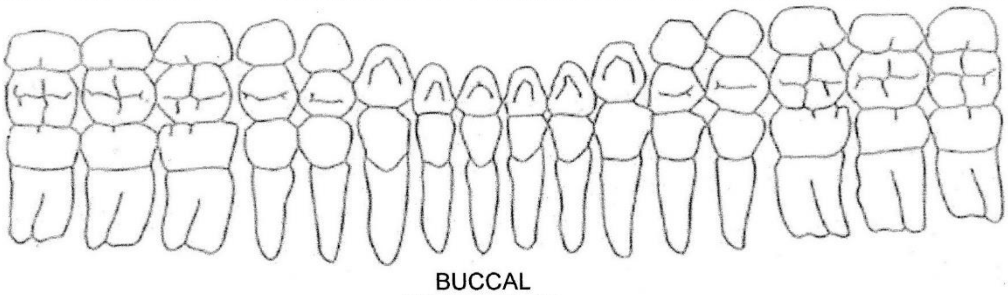
Dentition

MAXILLARY
BUCCAL



R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 L
Present		✓	✓	✓	✓					✓		✓	✓	✓	✓	u
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																

	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
Present	u	✓	✓			✓	✓	✓		✓	✓			✓	✓	u
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																



BUCCAL
MANDIBULAR

1 x separate molar crown
6 x loose teeth to be identified

Skeleton Number: 3 (juvenile) **Site: Nutbane**

Metric Data (4 - 15 years)

Skull

No.	*Measurement*	
1	Maximum length	
2	Maximum biparietal breadth	
4	Basi-bregmatic height	
5	Basi-nasal length	
19	Frontal chord	
20	Parietal chord	
21	Occipital chord	
13	Nasal height	
15	Orbital breadth	
8	Palate length	

Mandible

No.	*Measurement*	
25	Chin height	25.49MM
28	Bigonial width	–
29	Bicondylar breadth	–
30	Minimum ramus breadth	–
31	Maximum ramus breadth	c. 28.60MM
32	Maximum ramus height	–
33	Mandibular length	–
34	Mandibular angle	–

Post Cranial Skeleton

Measurement		L	R	Measurement		L	R
9a	Clavicle length			15 b	Ulna diameter	–	–
9b	Clavicle diameter			16 a	Radius length	–	–
11 a	Ilium length			16 b	Radius diameter	–	–
11 b	Ilium width			17 a	Femur length	c325	c.325mm
12 a	Ischium length			61	Bicondylar length		
12 b	Ischium width			62	Epicondylar breadth	c 55.37mm	
13	Pubis length			63	Head diameter		
14 a	Humerus length			18 a	Tibia length		
14 b	Humerus width			18 b	Tibia diameter	–	–
14 c	Humerus diameter			74	Circ. at nutrient foramen	–	–
15 a	Ulna length			19 a	Fibula length	–	–

Comments

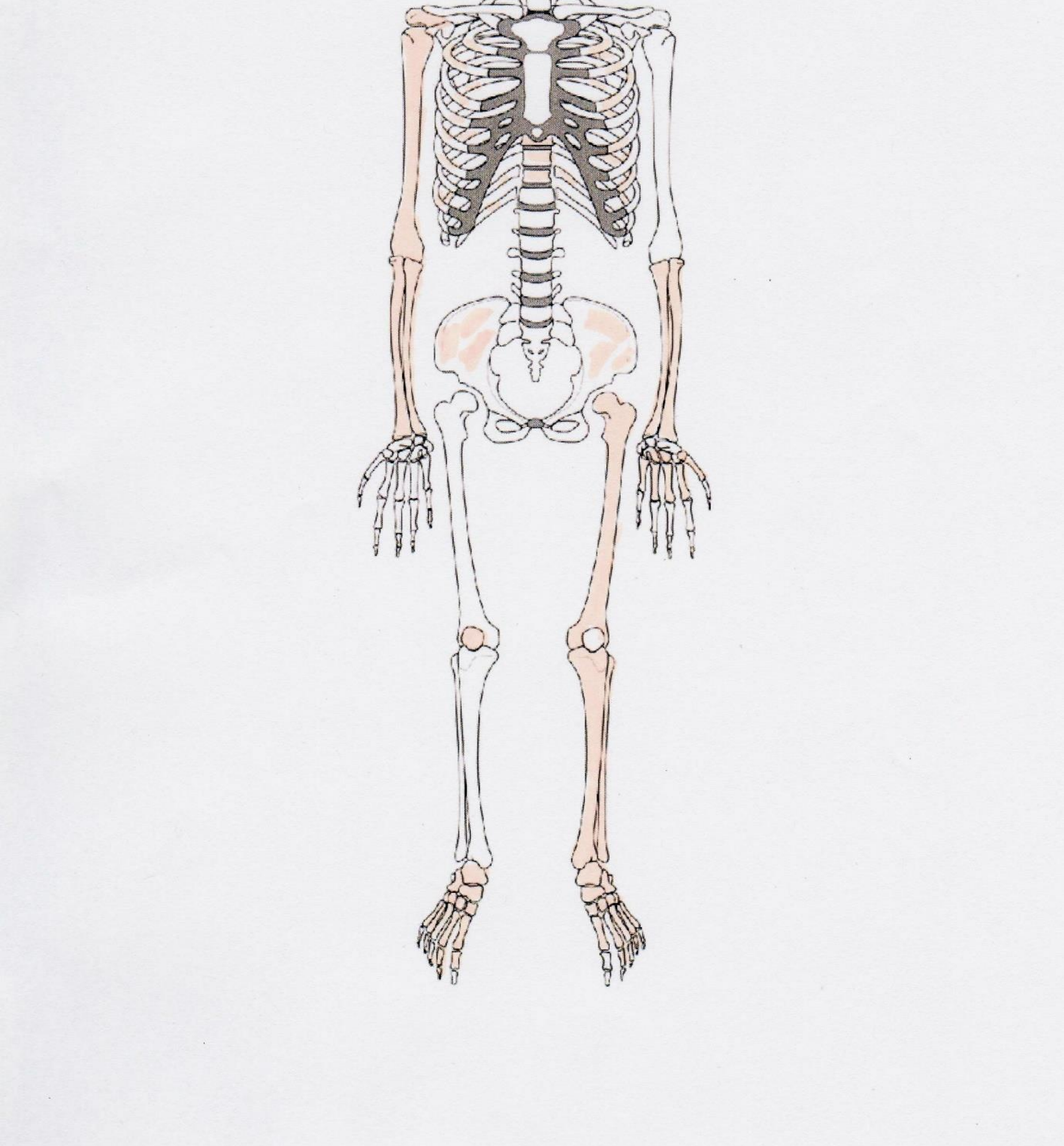
Skeleton Number: 4 (west) **Site: Nutbane**

SUMMARY

Sex	Male
Age estimation	25-35 years
Stature (Trotter, 1970)	163.51 cm (left femur) = 5ft 4in
Significant pathology	R fibula
Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%_ >75%_√_
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%__>75%_√_
Comments	Held in Hampshire Cultural Trust store, Winchester. Excavated in 1959, report in Proceedings of the Prehistoric Society vol 25 1959 'Excavation of a Long Barrow at Nutbane', 15-51, F de Mallet Morgan. Originally assessed as male, 30-40 years, 5ft 5in. Also in box were disarticulated adult and juvenile human remains from Pit 923 (unstratified), recorded on separate sheet.

Date: 17.06.2017 Initials: DC

Skeleton Number: 4 (west) **Site: Nutbane**



Skeleton Number: 4 (west) **Site: Nutbane**

Skeletal Elements

Cranial Bones (fragmentary, previously reconstructed)

Bone	**Right**	**Left**	**Bone**	
Parietal	Y	Y	Frontal	Y
Temporal	Y frag	Y frag	Occipital	y
Maxilla	Y	Y frag	Sphenoid	
Nasal			Vomer	
Zygomatic			Ethmoid	
Lacrimal			Hyoid	
Palatine			Cricoid	
Mandible	Y	y	Thyroid	

Vertebrae + 20 x unidentified frags

C1	**Y**	T6	
C2	+ 2 x other C-vert	T7	
C3		T8	
C4		T9	
C5		T10	
C6		T11	
C7		T12	
T1	3 x T-vert frags	L1	
T2		L2	
T3		L3	
T4		L4	
T5		L5	

R ribs: frags

L ribs: frags

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus	Y	Y	Y	Y	Y
Radius	Y	Y	Y	Y	Y
Ulna	Y	Y	Y	Y	Y
Femur					
Tibia	Y	Y	Y	Y	Y
Fibula	Y	Y	Y	Y	Y

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius	Y	Y	Y	Y	Y
Ulna	Y	Y	Y	Y	Y
Femur	Y	Y	Y	Y	Y
Tibia	Y	Y	Y	Y	Y
Fibula	Y	Y	Y	Y	Y

Right several non-diagnostic pelvis frags

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula			Y	
Clavicle				
Patella	Y			

Left

Bone	>75%	50-75	50-25	<25%	
Ilium					
Ischium					
Pubis					
Scapula					
Clavicle					
Patella					

Bone	>75%	50-75	50-25	<25%
Sternum				
Coccyx				
Sacrum				

Right	1	2	3	4	5
Metacarpals					
Metatarsals	Y	Y	Y	Y	Y

Left	1	2	3	4	5
Metacarpals	Y	Y	Y	Y	Y
Metatarsals	Y	Y	Y	Y	Y

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right									
Left	Y?	Y		Y					
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right	Y	Y	Y	Y	Y	Y	Y		
Left	Y	Y	Y	Y	Y	Y	Y		

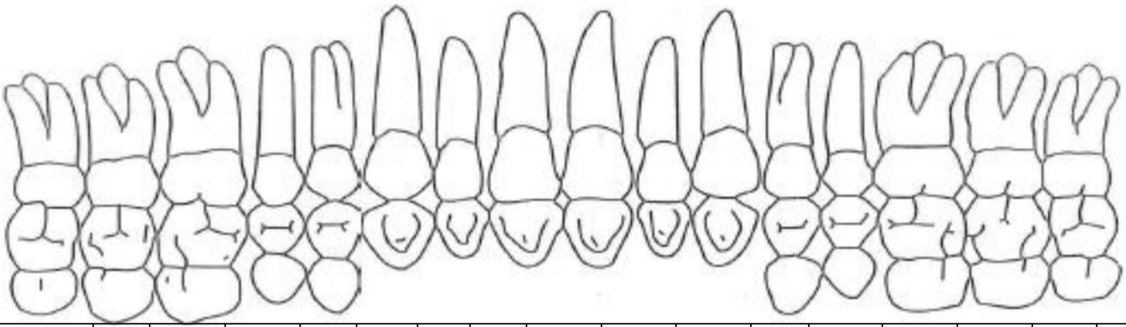
Hand Proximal phalanges _6_ Middle phalanges _2_ Distal phalanges _0_

Foot Proximal phalanges _5_ Middle phalanges _4_ Distal phalanges _1_

Skeleton Number: 4 (west) **Site: Nutbane**

Dentition

MAXILLARY
BUCCAL

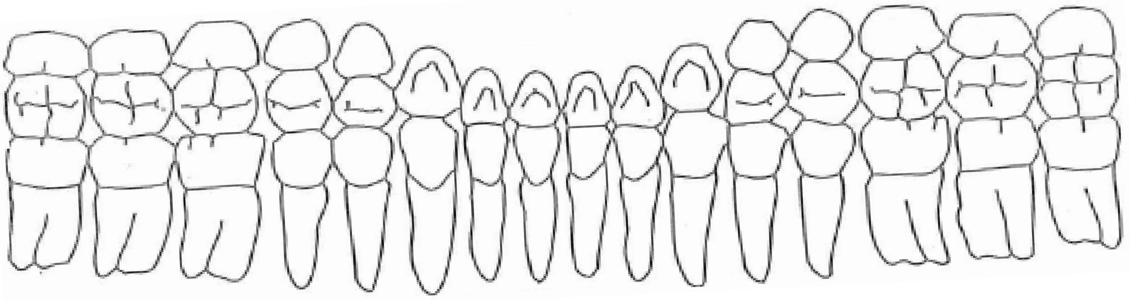


Present		Y	Y	Y	Y	Y										
Caries																
Calculus																
Periodontal disease																
EH																
Wear		Y	Y	Y	Y	Y										
Abscess																
AMTL																
PMTL																

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	**L**
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Present	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Caries																
Calculus	Y	Y	Y	Y	Y	Y	Y								Y	Y
Periodontal disease																
EH																
Wear	Y	Y	Y*	Y	Y	Y					Y	Y	Y	Y*	Y	Y
Abscess																
AMTL																
PMTL																

*= angular wear



BUCCAL
MANDIBULAR

Skeleton Number: 4 (west) **Site: Nutbane**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull		
	L	R		L	R
Ventral arc (1-3)			Nuchal crest (1-5)	-	-
Subpubic concavity (1-3)			Supraorbital margin (1-5)	3	-
Ischiopubic ramus ridge (1-3)			Mastoid process (1-5)	4	4
Greater Sciatic Notch (1-5)			Glabella (1-5)	4	
Preauricular sulcus (1-3)			Jaw shape (1-3)	3-4	
Overall shape			Overall shape		
Estimated sex – pelvis			Estimated sex - skull	M	

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F			Humerus:		
Radius Head: >23mm=M, <21mm=F	19.84 mm (F)	19.35 (F)	Ulna:		
Femoral Head: >48mm =M, <42mm=F		c.42.15 mm	Radius:		
Fem. Bicon. width: <76mm=M, >74=F		79.77 mm (M)	Femur:		429 mm
Scap. Glen. width: >28.6mm=M, >26.1mm=F		27 mm	Tibia:		357 mm
Clav. Max. Length: >150mm=M, <138mm=F			Fibula:	341 mm	347 mm

Age estimation

Dental eruption & development __________
Dental attrition 25-35 yrs

	Left	Right
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	____________	____________
Rib-phase	____________	____________
Unfused joints	____________	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest			Proximal humerus		
Medial clavicle			Distal femur		

List other significant bone development and/or fusion below:

Observation of sacrum & other comments

Skeleton Number: 4 (west) **Site: Nutbane**

Skeletal Pathology

Photographs

Number	Description
	?myositis ossificans traumatica to R fibula (tibialis anterior muscle)

Site Code/Context No./Name Lyneham Barrow

DISARTICULATED MATERIAL

Bone	Side	Segment	%	Age	Sex	Pathology	Photo
Skull fragments, including diagnostic				18+ years	Female	Depressed skull fracture	Y
	`						

Skeleton Number: SK3304 **Site: Lyneham Barrow**

SUMMARY

Sex	Female
Age estimation	18+
Stature (Trotter, 1970)	N/A
Significant pathology	Small depressed fracture to left parietal bone (Schulting 2005)
Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%__
Completeness	Degree of completeness: <25%
Comments	Held in Natural History Museum, reg no: 1952.2.20.2 Label on box: 'Lyneham barrow uncertain date (ex-Neolithic?)' Box contains 1951 newspaper, label: '(P)E Conder Esq GL 1949/87 Proceedings of the Society of Antiquities May 2nd 1895, Lyneham Barrow, Oxon' Label on skull: 'Skull No 3 found near flints 8 ft north of the wall' Skull previously reconstructed, heavier than others from Lyneham in NHM collection. Porous with indentations ?taphonomy

Date: 16.08.2017 Initials: DC

Skeleton Number: SK3304 **Site: Lyneham Barrow**

Skeletal Elements

Cranial Bones

Bone	**Right**	**Left**	**Bone**	
Parietal	Y	Y	Frontal	Y
Temporal	Y		Occipital	Y
Maxilla			Sphenoid	
Nasal			Vomer	
Zygomatic			Ethmoid	
Lacrimal			Hyoid	
Palatine			Cricoid	
Mandible			Thyroid	

Vertebrae

C1		T6	
C2		T7	
C3		T8	
C4		T9	
C5		T10	
C6		T11	
C7		T12	
T1		L1	
T2		L2	
T3		L3	
T4		L4	
T5		L5	

Right ribs __

Left ribs __

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius					
Ulna					
Femur					
Tibia					
Fibula					

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius					
Ulna					
Femur					
Tibia					
Fibula					

Right

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Left

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Bone	>75%	50-75	50-25	<25%
Sternum				
Coccyx				
Sacrum				

Right	1	2	3	4	5
Metacarpals					
Metatarsals					

Left	1	2	3	4	5
Metacarpals					
Metatarsals					

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right									
Left									
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right									
Left									

Hand Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___

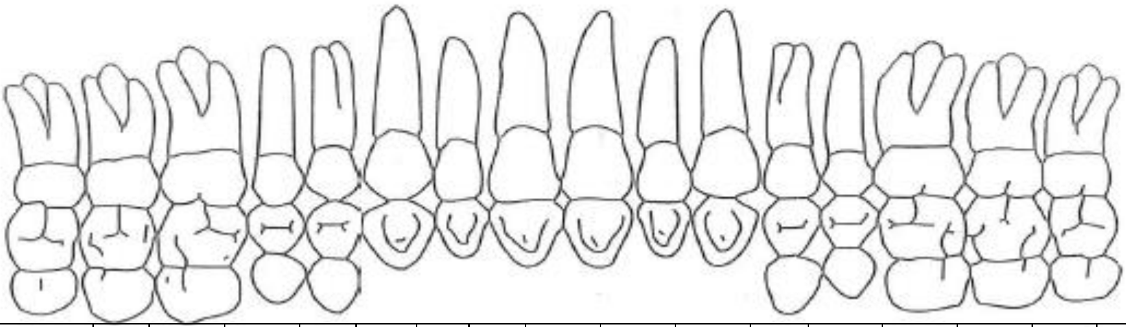
Foot Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___

Skeleton Number: SK3304 **Site: Lyneham Barrow**

Dentition

MAXILLARY

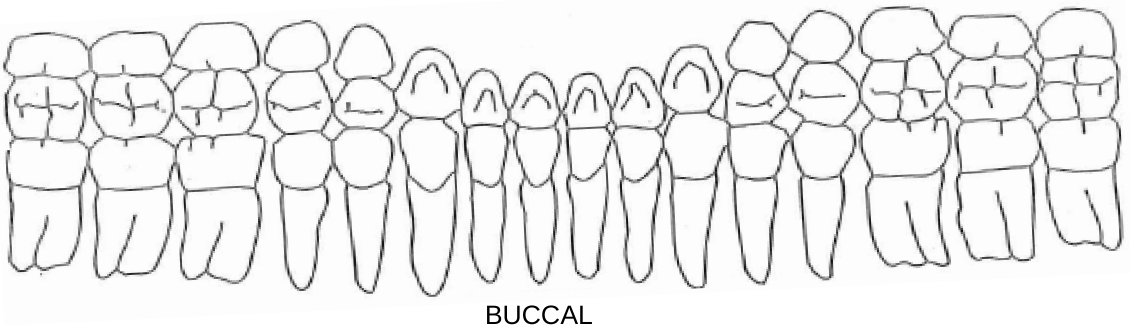
BUCCAL



Present																
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	**L**
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Present																
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																



BUCCAL

MANDIBULAR

Skeleton Number: SK3304 **Site: Lyneham Barrow**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull	
R	L	R		L
Ventral arc (1-3)	-	-	Nuchal crest (1-5)	2/3
Subpubic concavity (1-3)	-	-	Supraorbital margin (1-5)	2/3
Ischiopubic ramus ridge (1-3)	-	-	Mastoid process (1-5)	
Greater Sciatic Notch (1-5)	-	-	Glabella (1-5)	1
Preauricular sulcus (1-3)	-	-	Jaw shape (1-3)	
Overall shape	-		Overall shape	
Estimated sex – pelvis	-		Estimated sex - skull	F

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F			Humerus:		
Radius Head: >23mm=M, <21mm=F			Ulna:		
Femoral Head: >48mm =M, <42mm=F			Radius:		
Fem. Bicon. width: <76mm=M, >74=F			Femur:		
Scap. Glen. width: >28.6mm=M, >26.1mm=F			Tibia:		
Clav. Max. Length: >150mm=M, <138mm=F			Fibula:		

Age estimation

Dental eruption & development __________
Dental attrition __________

	Left	Right
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	____________	____________
Rib-phase	____________	____________
Unfused joints	____________	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest			Proximal humerus		
Medial clavicle			Distal femur		

List other significant bone development and/or fusion below:

Cranial sutures fused

Observation of sacrum & other comments

Skeleton Number: SK3304 **Site: Lyneham Barrow**

Skeletal Pathology

Photographs

Number	Description
	Small depressed fracture to left parietal bone (Schulting 2005)

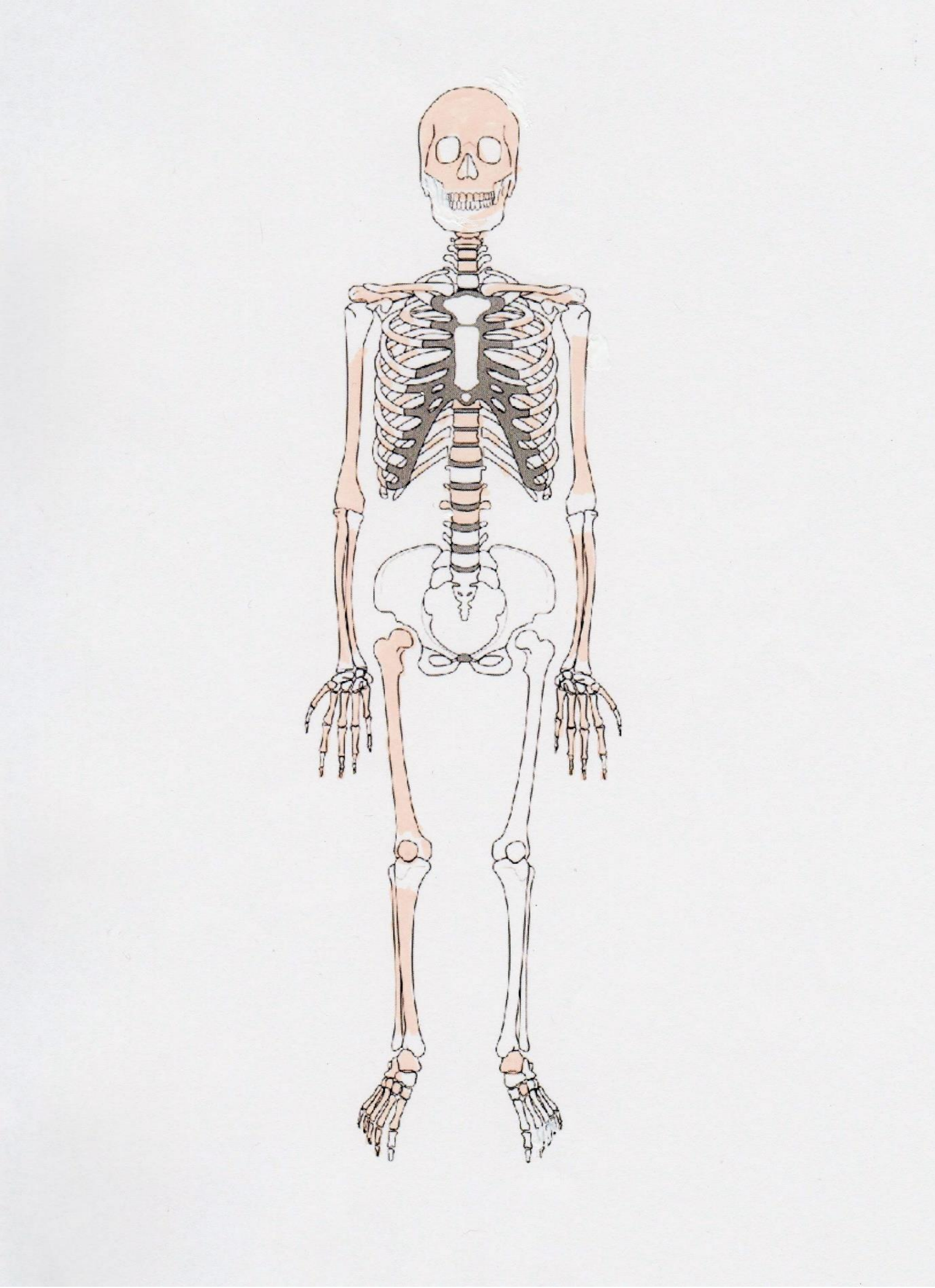
Skeleton Number: 1964, 0206.7581 **Site: Staines**

SUMMARY

Sex	Female
Age estimation	35-45 years
Stature (Trotter, 1970)	Original measurement of R femur* 437 mm -> stature 162.04 cm *now incomplete
Significant pathology	Porosity of palate, OA? to distal phalange of foot, OA? to cervical vertebrae, OA to acetabulum. Also persistent metopic suture, wormian bones to lambdoid?
Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%_√_ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%√_ >75%__
Comments	Skull reconstructed with cement, post-cranial skeleton very fragmentary, some long bones cemented. All previously bagged and weighed. Dark patination, crumbly. Originally assessed as female aged mid-30s (Robertson Mackay, 1987)

Date: 16.05.2017 Initials: DC

Skeleton Number: 1964, 0206.7581 **Site: Staines**



Skeleton Number: 1964, 0206.7581 **Site: Staines**

Skeletal Elements

Cranial Bones - Greatly reconstructed with cement

Bone	Right	Left	Bone	
Parietal	Y	Y	Frontal	Y
Temporal	Y	Y	Occipital	Y
Maxilla	Y	Y	Sphenoid	
Nasal			Vomer	
Zygomatic	?	?	Ethmoid	
Lacrimal			Hyoid	
Palatine			Cricoid	
Mandible		Y frags	Thyroid	

Right ribs: 3)18xfrags
Left ribs: 3)

Vertebrae

C1	**Y**	T6	
C2	Y	T7	
C3	+4 other C-vert	T8	
C4		T9	
C5		T10	
C6		T11	
C7		T12	
T1	x7	L1	X2
T2		L2	
T3		L3	
T4		L4	
T5		L5	

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus		frag	Y	Y	Y
Radius	Y	Y	Y	Y	frag
Ulna	frag	Y	Y	Y	
Femur	Y	Y	Y	Y	frag
Tibia	frag	Y	Y	Y	frag
Fibula	frag	Y	Y	Y	frag

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus		Y	Y	Y	
Radius		Y	Y	Y	
Ulna		Y	Y	Y	
Femur					
Tibia					
Fibula					

Plus: 38 x lower leg bone frags, 2 x femur frags, 2 x tibia frags, 2 x fibula frags

Right

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula			Y	
Clavicle		Y		
Patella	Y			

Left

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula				Y
Clavicle	Y			
Patella				

21 x pelvis frags in total

Bone	>75%	50-75	50-25	<25%
Sternum				
Coccyx				
Sacrum				

Right	1	2	3	4	5
Metacarpals	Y	Y	Y	Y	Y
Metatarsals	Y?	Y?	Y?	Y?	Y?

Left	1	2	3	4	5
Metacarpals	Y?	Y?	Y?	Y?	Y?
Metatarsals					

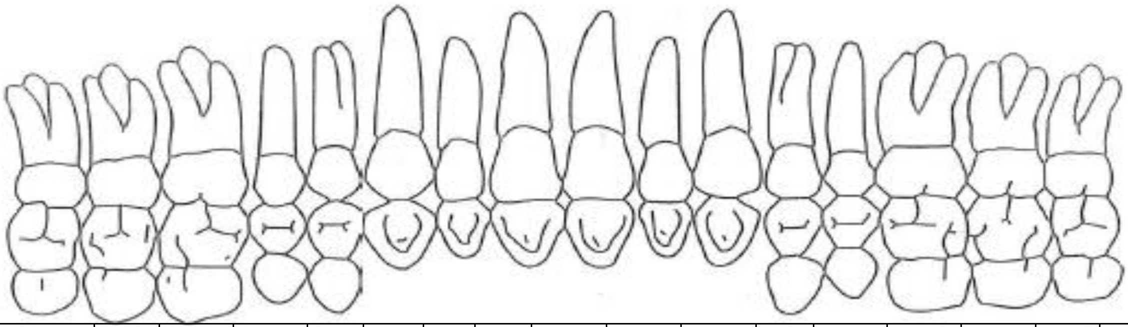
	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right	Y	Y		Y?	Y	Y?			
Left									
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right	Y		Y?	Y	Y?	Y	Y?		
Left	Y?					Y?			

Hand Proximal phalanges _7_ Middle phalanges _6_ Distal phalanges _5_
Foot Proximal phalanges _3_ Middle phalanges _1_ Distal phalanges ___

Skeleton Number: 1964, 0206.7581 **Site: Staines**

Dentition

MAXILLARY
BUCCAL

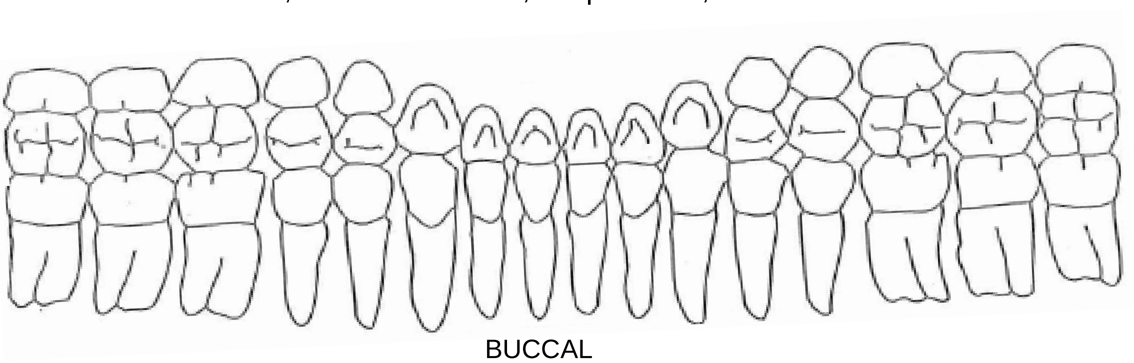


Present	Y?						Y	Y	Y	Y	Y	Y		Y		
Caries																
Calculus																
Periodontal disease																
EH																
Wear	Y						Y	Y	Y	Y	Y	Y		Y		
Abscess																
AMTL																
PMTL	Y															

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	**L**
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Present		Y						Y	Y	Y	Y				Y	
Caries		Y													Y	
Calculus															Y	
Periodontal disease																
EH																
Wear		Y													Y	
Abscess																
AMTL																
PMTL																

Plus, loose: 3 x molars, 1 x premolar, 1 x canine



BUCCAL
MANDIBULAR

Skeleton Number: 1964, 0206.7581 **Site: Staines**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull		
L R				L R	
Ventral arc (1-3)			Nuchal crest (1-5)	1-2	
Subpubic concavity (1-3)			Supraorbital margin (1-5)	2	2
Ischiopubic ramus ridge (1-3)			Mastoid process (1-5)	2-3	
Greater Sciatic Notch (1-5)	F		Glabella (1-5)	2-3	
Preauricular sulcus (1-3)			Jaw shape (1-3) Mental eminence	1-2	
Overall shape			Overall shape		
Estimated sex – pelvis	F?		Estimated sex - skull	F	

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F			Humerus:		
Radius Head: >23mm=M, <21mm=F			Ulna:		
Femoral Head: >48mm =M, <42mm=F			Radius: (distal jt broken)	221+ mm	
Fem. Bicon. width: <76mm=M, >74=F			Femur:	(437 mm orig assess)	
Scap. Glen. width: >28.6mm=M, >26.1mm=F	c.24.13 mm (F)		Tibia:	(331 mm orig assess)	
Clav. Max. Length: >150mm=M, <138mm=F			Fibula:		

Age estimation

Dental eruption & development 18+

Dental attrition 35-45 yrs (though M1 looks 25-35)

	Left	Right
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	____________	____________
Rib-phase	____________	____________
Unfused joints	____________	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest			Proximal humerus		
Medial clavicle			Distal femur		

List other significant bone development and/or fusion below:

Observation of sacrum & other comments

Skeleton Number: 1964, 0206.7581 **Site: Staines**

Skeletal Pathology

Photographs

Number	Description
	Persistent metopic suture
	Wormian bones to lambdoid?
	OA to one distal foot phalanx
	OA to cervical vertebrae
	OA to acetabulum?

Site Code/Context No./Name : Whiteleaf Hill, Skeleton Number: PA SK14 RCS 4.02.4 ______________

DISARTICULATED MATERIAL

Bone	Side	Segment	%	Age	Sex	Pathology	Photo
Skull fragments, including diagnostic				45+ years	Male	None observed	Y

Skeleton Number: PA SK14 RCS 4.02.4 **Site: Whiteleaf Hill**

SUMMARY

Sex	Male
Age estimation	45+ years
Stature (Trotter, 1970)	N/A
Significant pathology	None observed
Preservation	Degree of preservation: <25%
Completeness	Degree of completeness: <25%
Comments	Held in Natural History Museum. Although long bones originally donated only skull fragments now present. Neolithic barrow excavated 1934-39 by Sir Lindsay Scott who died in 1952 prior to completing the excavation or reporting following the war. Report subsequently published in Proceedings of the Prehistoric Society (1954) by V G Childe and Isobel Smith. Primary burial assessed by M L Tildesley (RCS) to be a middle-aged man, 5ft 6in – 5ft 9in, robust, dental attrition, no caries, large abscess cavities upper and lower, arthritis in joints of spine, ribs, hands and feet. Bones found in no particular articulation to each other. Post-mortem breakage interpreted as either reinterred where found or in situ and subsequently disturbed. Whiteleaf Hill recently reinvestigated by Oxford Archaeology as part of local nature reserve restoration project including re-examination of site and excavation archives, plus new analysis including radiocarbon dating (3700-3650 cal BC) Hey, Dennis & Mayes, 2002-06 (online).

Date: 16.08.2017 Initials: DC

Skeleton Number: PA SK14 RCS 4.02.4 **Site: Whiteleaf Hill**

Skeletal Elements

Cranial Bones

Bone	**Right**	**Left**	**Bone**	
Parietal			Frontal	frag
Temporal	frag	frag	Occipital	frag
Maxilla			Sphenoid	
Nasal			Vomer	
Zygomatic			Ethmoid	
Lacrimal			Hyoid	
Palatine			Cricoid	
Mandible	Y	Y	Thyroid	

Vertebrae

C1		T6	
C2		T7	
C3		T8	
C4		T9	
C5		T10	
C6		T11	
C7		T12	
T1		L1	
T2		L2	
T3		L3	
T4		L4	
T5		L5	

Right ribs __

Left ribs __

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius					
Ulna					
Femur					
Tibia					
Fibula					

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius					
Ulna					
Femur					
Tibia					
Fibula					

Right

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Left

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Bone	>75%	50-75	50-25	<25%
Sternum				
Coccyx				
Sacrum				

Right	1	2	3	4	5
Metacarpals					
Metatarsals					

Left	1	2	3	4	5
Metacarpals					
Metatarsals					

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right									
Left									
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right									
Left									

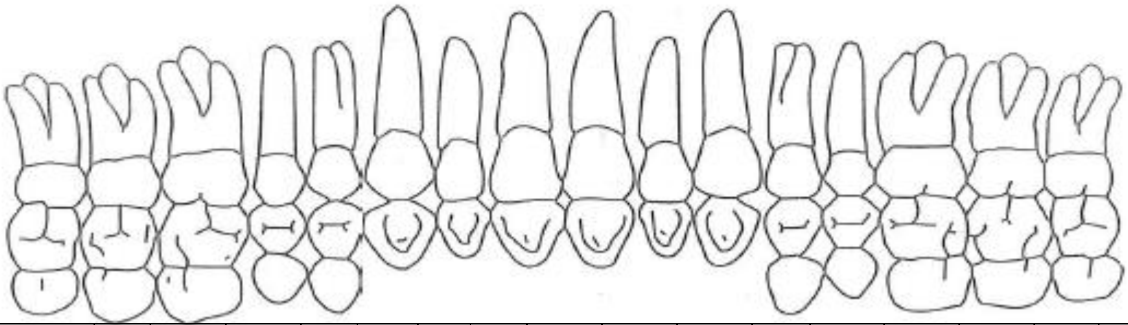
Hand Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___

Foot Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___

Skeleton Number: PA SK14 RCS 4.02.4 **Site: Whiteleaf Hill**

Dentition

MAXILLARY
BUCCAL

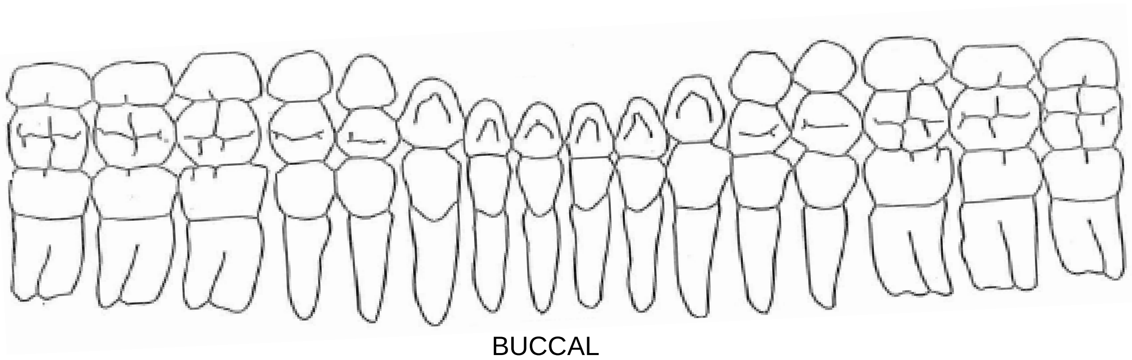


Present																
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																

R 1 2 3 4 5 6 7 8 | 9 10 11 12 13 14 15 16 **L**
32 31 30 29 28 27 26 25 | 24 23 22 21 20 19 18 17

Present		Y													Y	
Caries																
Calculus																
Periodontal disease																
EH																
Wear		Y													Y	
Abscess																
AMTL																
PMTL			Y	Y	Y	Y								Y		Y

Mandible previously reconstructed with cement
Molars present split and with angular wear



BUCCAL
MANDIBULAR

Skeleton Number: PA SK14 RCS 4.02.4 **Site: Whiteleaf Hill**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull		
	L	R		L	R
Ventral arc (1-3)			Nuchal crest (1-5)	4	
Subpubic concavity (1-3)			Supraorbital margin (1-5)	3/4	
Ischiopubic ramus ridge (1-3)			Mastoid process (1-5)	4	3
Greater Sciatic Notch (1-5)			Glabella (1-5)	3/4	
Preauricular sulcus (1-3)			Jaw shape (1-3) mental eminence	4/5	
Overall shape			Overall shape	M	
Estimated sex – pelvis			Estimated sex - skull	M	

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F			Humerus:		
Radius Head: >23mm=M, <21mm=F			Ulna:		
Femoral Head: >48mm =M, <42mm=F			Radius:		
Fem. Bicon. width: <76mm=M, >74=F			Femur:		
Scap. Glen. width: >28.6mm=M, >26.1mm=F			Tibia:		
Clav. Max. Length: >150mm=M, <138mm=F			Fibula:		

Age estimation

	Left	Right
Dental eruption & development	__________	
Dental attrition	45+ years	
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	____________	____________
Rib-phase	____________	____________
Unfused joints	____________	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest			Proximal humerus		
Medial clavicle			Distal femur		

List other significant bone development and/or fusion below:

Observation of sacrum & other comments

Skeleton Number: PA SK14 RCS 4.02.4 **Site: Whiteleaf Hill**

<u>Skeletal Pathology</u>

Photographs

Number	Description

Site Code/Context No./Name Whyteleafe

DISARTICULATED MATERIAL

Bone	Side	Segment	%	Age	Sex	Pathology	Photo
Skull, femur, tibia fragments				18+ years	?	None observed	Y

Date: 21.03.2017 Initials: DC

Skeleton Number: **Site: Whyteleafe**

SUMMARY

Sex	Indeterminate
Age estimation	18+ (?35-45) years
Stature (Trotter, 1970)	N/A
Significant pathology	None observed
Preservation	Degree of preservation: <25%
Completeness	Degree of completeness: <25%
Comments	Held in Croydon Museum, formerly in Grangewood Museum. Found in 1896 near village of Whyteleafe in Surrey by workmen. Buried in a dome-shaped pit in chalk rubble, about 4ft 6in deep, 4ft diameter at the base, filled with dark brown loam. Workman described bones as being in a confused heap as is 'tumbled in anyhow', interpreted by A J Hogg (Transactions of Croydon Natural History and Scientific Society, 1905-1906) as 'what might be expected in the case of a Neolithic interment where the body was buried in what is known as the 'contracted position', that is, in a sitting or crouching posture, with the knees drawn up towards the head'. The workmen threw out the bones and the rest were broken up and dispersed by the local children. Grave goods: small chisel, blunt-ended arrow, leaf-shaped arrow heads, saw, animal bones (horse, cow, deer, sheep). Photograph in TCNHSS report of the bones and finds. Museum catalogue lists finds as exhibited and audited in 1915. Note: also in Grangewood Museum collection are a mandible from a second individual with six teeth present, plus fragmentary cremated bone. Not mentioned in report.

Date: 21.03.2017 Initials: DC

Skeleton Number: **Site: Whyteleafe**

Skeletal Elements

Cranial Bones

Bone	Right	Left	Bone	
Parietal	frag		Frontal	
Temporal			Occipital	frag
Maxilla			Sphenoid	
Nasal			Vomer	
Zygomatic			Ethmoid	
Lacrimal			Hyoid	
Palatine			Cricoid	
Mandible	frag		Thyroid	

Right ribs __
Left ribs __

Vertebrae

C1		T6	
C2		T7	
C3		T8	
C4		T9	
C5		T10	
C6		T11	
C7		T12	
T1		L1	
T2		L2	
T3		L3	
T4		L4	
T5		L5	

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius					
Ulna					
Femur			frag		
Tibia			frag		
Fibula					

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius					
Ulna					
Femur					
Tibia					
Fibula					

Right

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Left

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Bone	>75%	50-75	50-25	<25%
Sternum				
Coccyx				
Sacrum				

Right	1	2	3	4	5
Metacarpals					
Metatarsals					

Left	1	2	3	4	5
Metacarpals					
Metatarsals					

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right									
Left									
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right									
Left									

Hand Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___
Foot Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___

Skeleton Number: **Site: Whyteleafe**

Dentition

MAXILLARY
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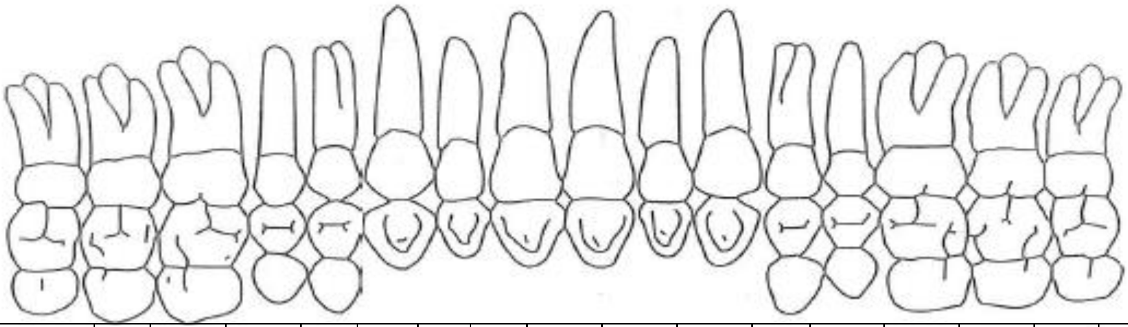


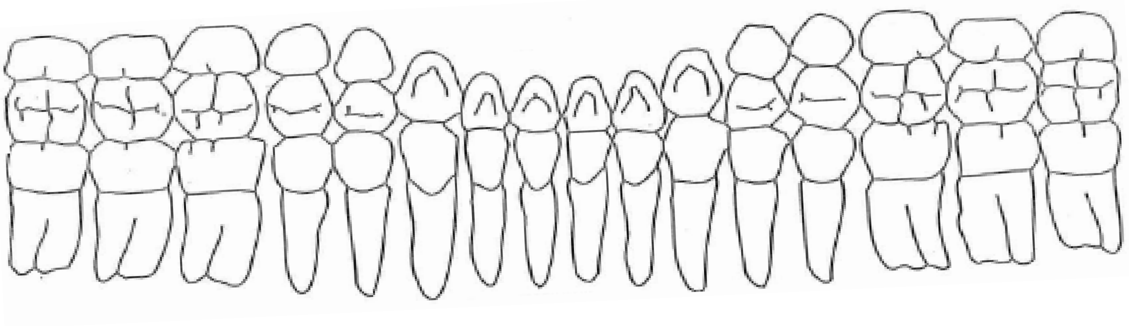
Present																
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																

R 1 2 3 4 5 6 7 8 | 9 10 11 12 13 14 15 16 **L**

32 31 30 29 28 27 26 25 | 24 23 22 21 20 19 18 17

Present	Y															
Caries																
Calculus																
Periodontal disease																
EH																
Wear	Y															
Abscess																
AMTL																
PMTL		Y	Y	Y	Y	Y	Y	Y	Y							

+ loose unsided teeth: 1 x canine, 2 x premolar, 4 x incisor



BUCCAL
MANDIBULAR

Skeleton Number: **Site: Whyteleafe**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull		
	L	R			L
R					
Ventral arc (1-3)			Nuchal crest (1-5)		
Subpubic concavity (1-3)			Supraorbital margin (1-5)		
Ischiopubic ramus ridge (1-3)			Mastoid process (1-5)		
Greater Sciatic Notch (1-5)			Glabella (1-5)		
Preauricular sulcus (1-3)			Jaw shape (1-3)	M	
Overall shape			Overall shape		
Estimated sex – pelvis			Estimated sex - skull	M?	

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F			Humerus:		
Radius Head: >23mm=M, <21mm=F			Ulna:		
Femoral Head: >48mm =M, <42mm=F			Radius:		
Fem. Bicon. width: <76mm=M, >74=F			Femur:		
Scap. Glen. width: >28.6mm=M, >26.1mm=F			Tibia:		
Clav. Max. Length: >150mm=M, <138mm=F			Fibula:		

Age estimation

	Left	Right
Dental eruption & development	__________	
Dental attrition	35-45 yrs	
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	____________	____________
Rib-phase	____________	____________
Unfused joints	____________	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest			Proximal humerus		
Medial clavicle			Distal femur		

List other significant bone development and/or fusion below:

Observation of sacrum & other comments

Skeleton Number: **Site: Whyteleafe**

Skeletal Pathology

Photographs

Number	Description

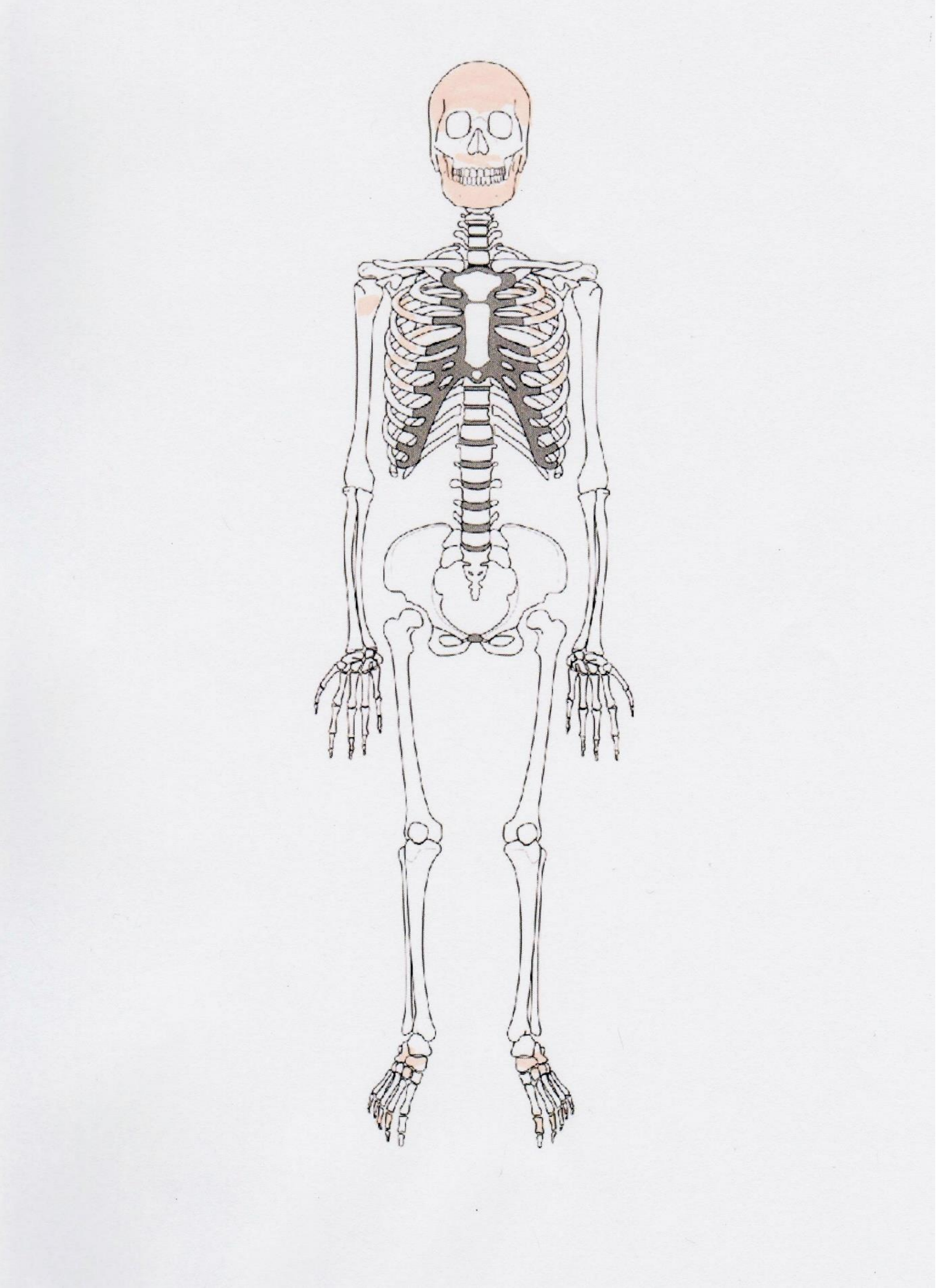
Skeleton Number: 1961/1586A-1 **Site: Cissbury**

SUMMARY

Sex	Female
Age estimation	17-25 years
Stature (Trotter, 1970)	L femur 404 mm in previous assessment (Trevor, 1950s) -> 153.89 cm = 5ft 1in
Significant pathology	Unhealed trauma to the cranium x 3
Preservation	Degree of preservation: <25%_√_ 25-50%__ up to 75%__ 75%__
Completeness	Degree of completeness: <25%_√_ 25-50%__ up to 75%__ >75%__
Comments	Skeleton from shaft 27. Dr Densham assessed as male, late 20s. J C Trevor PhD (Director Duckworth Laboratory of Physical Anthropology, Cambridge) reassessed as female, c.20 years (?1950s – see undated written report). Found near leaf-shaped arrowhead. John Pull thought individual had been hit by three large blocks of falling chalk. Found lying on left, knees flexed, thighs crossed, head placed on chalk block with brown staining interpreted as blood. Pull's notes refer to following injuries: smashed face, driven right hand into chest, broken left humerus, broken back just above pelvis (only skull survives of these). Holgate (1995): accidental death resulting in that burial position or deliberate burial deposit? Pelvis and at least one leg currently on display at Worthing Museum (composite skeleton with Saxon human remains) (James Sainsbury, pers comm).

Date: 10.06.2016 Initials: DC

Skeleton Number: 1961/1586A-1 **Site: Cissbury**



Skeleton Number: 1961/1586A-1 **Site: Cissbury**

Skeletal Elements

Cranial Bones

Bone	**Right**	**Left**	**Bone**	
Parietal	Y	Y	Frontal	
Temporal	Y frag		Occipital	Y
Maxilla	Y frag	Y frag	Sphenoid	
Nasal			Vomer	
Zygomatic			Ethmoid	
Lacrimal			Hyoid	Y
Palatine			Cricoid	
Mandible	Y	Y	Thyroid	

14 x unsided frags

R ribs: 2 frags

L ribs: 3 frags

Vertebrae

C1		T6	
C2		T7	
C3		T8	
C4		T9	
C5		T10	
C6		T11	
C7		T12	
T1		L1	
T2		L2	
T3		L3	
T4		L4	
T5		L5	

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus	frag				
Radius					
Ulna					
Femur					
Tibia					
Fibula					

Left

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius					
Ulna					
Femur					
Tibia					
Fibula					

Right

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Left

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Bone	>75%	50-75	50-25	<25%
Sternum				
Coccyx				
Sacrum				

Right	1	2	3	4	5
Metacarpals					
Metatarsals					

Left	1	2	3	4	5
Metacarpals					
Metatarsals					

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right									
Left	Y			Y					
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right				Y	Y	Y			x2
Left				Y	Y		Y		

Hand Proximal phalanges ___ Middle phalanges _2_ Distal phalanges _6_

Foot Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___

Skeleton Number: 1961/1586A-1 **Site: Cissbury**

Dentition

MAXILLARY

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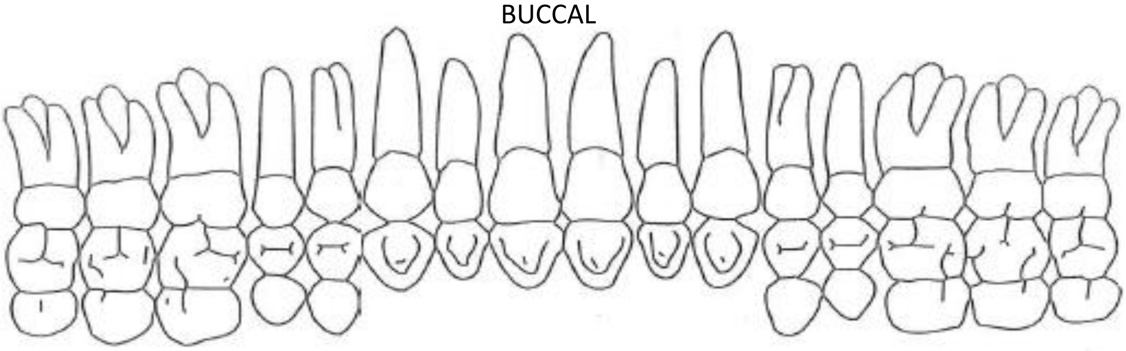
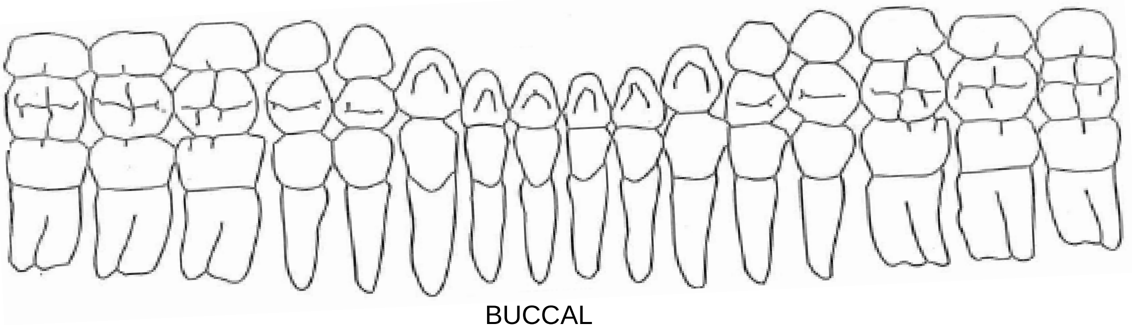


Present	Y	Y	Y	Y	Y	Y		Y?	Y?		Y	Y	Y	Y	Y	Y
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL							Y			Y						

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	**L**
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Present	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL								Y								



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MANDIBULAR

Skeleton Number: 1961/1586A-1 **Site: Cissbury**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis	L	R	Skull	L R
Ventral arc (1-3)			Nuchal crest (1-5)	2-3
Subpubic concavity (1-3)			Supraorbital margin (1-5)	
Ischiopubic ramus ridge (1-3)			Mastoid process (1-5)	2
Greater Sciatic Notch (1-5)			Glabella (1-5)	
Preauricular sulcus (1-3)			Jaw shape (1-3)	1-2
Overall shape			Overall shape	
Estimated sex – pelvis			Estimated sex - skull	F

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F			Humerus:		
Radius Head: >23mm=M, <21mm=F			Ulna:		
Femoral Head: >48mm =M, <42mm=F			Radius:		
Fem. Bicon. width: <76mm=M, >74=F			Femur:		
Scap. Glen. width: >28.6mm=M, >26.1mm=F			Tibia:		
Clav. Max. Length: >150mm=M, <138mm=F			Fibula:		

Age estimation

Dental eruption & development 18+
Dental attrition 17-25 years

	Left	Right
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	____________	____________
Rib-phase	____________	____________
Unfused joints	____________	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest			Proximal humerus		
Medial clavicle			Distal femur		

List other significant bone development and/or fusion below:

Observation of sacrum & other comments

Skeleton Number: 1961/1586A-1 **Site: Cissbury**

Skeletal Pathology

Photographs

Number	Description
	Three areas of unhealed (perimortem?) trauma to cranium

Site Code/Context No./Name North Marden

DISARTICULATED MATERIAL

Bone	Side	Segment	%	Age	Sex	Pathology	Photo
Cranium (further analysis follows below)		Frontal, occipital, parietals	50%	45+	M?		Y
Humerus		Medial, distal		18+	?		Y
Tibia		Medial		18+	?		Y

Skeleton Number: **Site: North Marden**

SUMMARY

Sex	Male?
Age estimation	45+
Stature (Trotter, 1970)	N/A
Significant pathology	N/A
Preservation	Degree of preservation: <25%
Completeness	Degree of completeness: <25%
Comments	From ditch segment 5, context 65: loose chalk rubble derived from the barrow contained area of charcoal 1x1.4m containing Neolithic pottery and human cranium – interpreted by excavator as deliberate deposit. C14 from charcoal in context 65 (HAR-5544) 3710-3100 cal BC Long bone fragments from ditches felt by excavator to be from separate individuals.

Date: 21.10.2016 Initials: DC

Skeleton Number: Site: North Marden

Skeletal Elements

Cranial Bones

Bone	**Right**	**Left**	**Bone**	
Parietal	Y	Y	Frontal	Y
Temporal			Occipital	Y
Maxilla			Sphenoid	
Nasal			Vomer	
Zygomatic			Ethmoid	
Lacrimal			Hyoid	
Palatine			Cricoid	
Mandible			Thyroid	

Vertebrae

C1		T6	
C2		T7	
C3		T8	
C4		T9	
C5		T10	
C6		T11	
C7		T12	
T1		L1	
T2		L2	
T3		L3	
T4		L4	
T5		L5	

Right ribs __

Left ribs __

Right

Bone	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus					
Radius					
Ulna					
Femur					
Tibia					
Fibula					

Left – from separate individual?

	Prox JS	P 1/3	M 1/3	D 1/3	Dist JS
Humerus			Y	Y	Partial
Radius					
Ulna					
Femur					
Tibia			Y		
Fibula					

Right

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Left

Bone	>75%	50-75	50-25	<25%
Ilium				
Ischium				
Pubis				
Scapula				
Clavicle				
Patella				

Bone	>75%	50-75	50-25	<25%
Sternum				
Coccyx				
Sacrum				

Right	1	2	3	4	5
Metacarpals					
Metatarsals					

Left	1	2	3	4	5
Metacarpals					
Metatarsals					

	Scaphoid	Lunate	Triquetral	Pisiform	Trapezium	Trapezoid	Capitate	Hamate	Sesmoid
Right									
Left									
	Talus	Calcaneus	1st Cun	2nd Cun	3rd Cun	Navicular	Cuboid		Sesmoid
Right									
Left									

Hand Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___

Foot Proximal phalanges ___ Middle phalanges ___ Distal phalanges ___

Skeleton Number: **Site: North Marden**

Dentition

MAXILLARY

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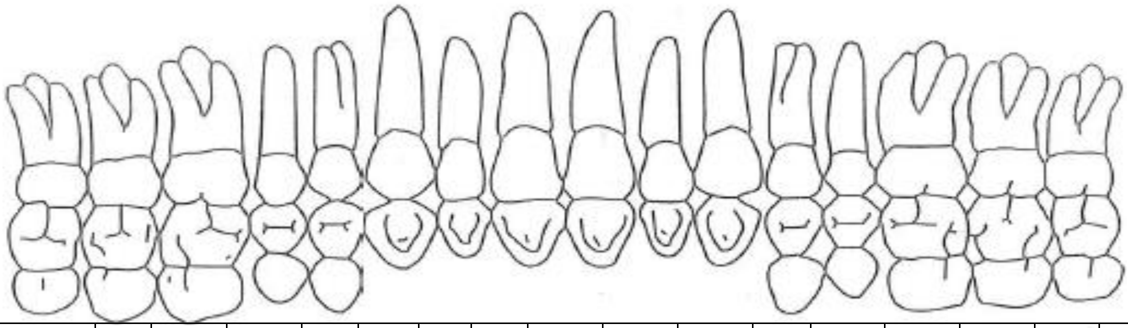
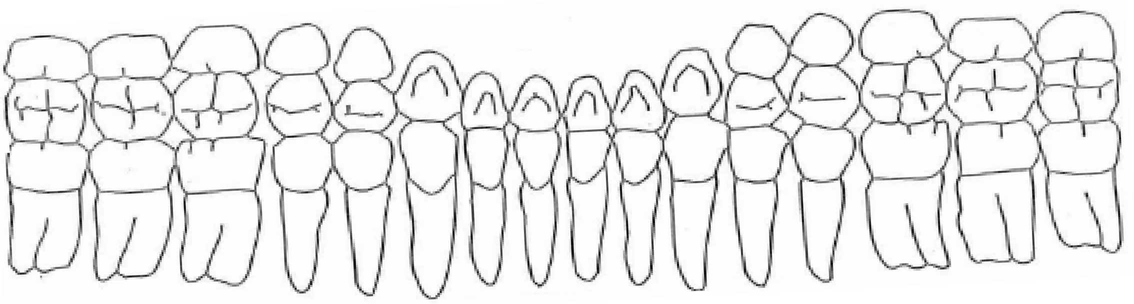


Present																
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																

R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	**L**
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Present																
Caries																
Calculus																
Periodontal disease																
EH																
Wear																
Abscess																
AMTL																
PMTL																



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MANDIBULAR

Skeleton Number: **Site: North Marden**

Adult Sex/Age/Ethnic Assessment

Sex

Pelvis			Skull	
	L	R		L R
Ventral arc (1-3)	-	-	Nuchal crest (1-5)	M
Subpubic concavity (1-3)	-	-	Supraorbital margin (1-5)	M/F
Ischiopubic ramus ridge (1-3)	-	-	Mastoid process (1-5)	-
Greater Sciatic Notch (1-5)	-	-	Glabella (1-5)	M
Preauricular sulcus (1-3)	-	-	Jaw shape (1-3)	-
Overall shape	-		Overall shape	
Estimated sex – pelvis	-		Estimated sex - skull	M?

SEX: metrical data (Stewart, 1979)			STATURE:		
	Right	Left		Right	Left
Humerus Head: >47mm=M, <43mm=F			Humerus:		
Radius Head: >23mm=M, <21mm=F			Ulna:		
Femoral Head: >48mm =M, <42mm=F			Radius:		
Fem. Bicon. width: <76mm=M, >74=F			Femur:		
Scap. Glen. width: >28.6mm=M, >26.1mm=F			Tibia:		
Clav. Max. Length: >150mm=M, <138mm=F			Fibula:		

Age estimation

	Left	Right
Dental eruption & development	__________	
Dental attrition	__________	
Pubic symphysis (Suchey-Brooks)	____________	____________
Auricular surface	____________	____________
Rib-phase	____________	____________
Unfused joints	____________	____________

	fused	unfused		fused	unfused
Inferior angle of scapula			Proximal tibia		
Tip of coracoids			Vertebral end plates		
Ramal epiphysis			Distal radius		
Iliac crest			Proximal humerus		
Medial clavicle			Distal femur		

List other significant bone development and/or fusion below:
Cranial suture closure: 45+ years

Observation of sacrum & other comments

Skeleton Number: **Site: North Marden**

Skeletal Pathology

Photographs

Number	Description
	None observed

APPENDIX 5 – ARCHAEOTHANATOLOGY RECORDING FORMS

Skeleton Number: 5354 (Juvenile) **Site: Barrow Hills**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Flat grave (?originally part of small cemetery)
Recorded burIal position: Crouched, orientated south-to-north, on right facing east. Left arm folded, legs tightly flexed, knees near to chest.
Recorded grave fill: Cut into natural gravel, filled with clean sand, gravel and sandy loam above

Conclusions:
Original burial position: Flexed on right
Restricted or empty burial space: Original void, filled gradually

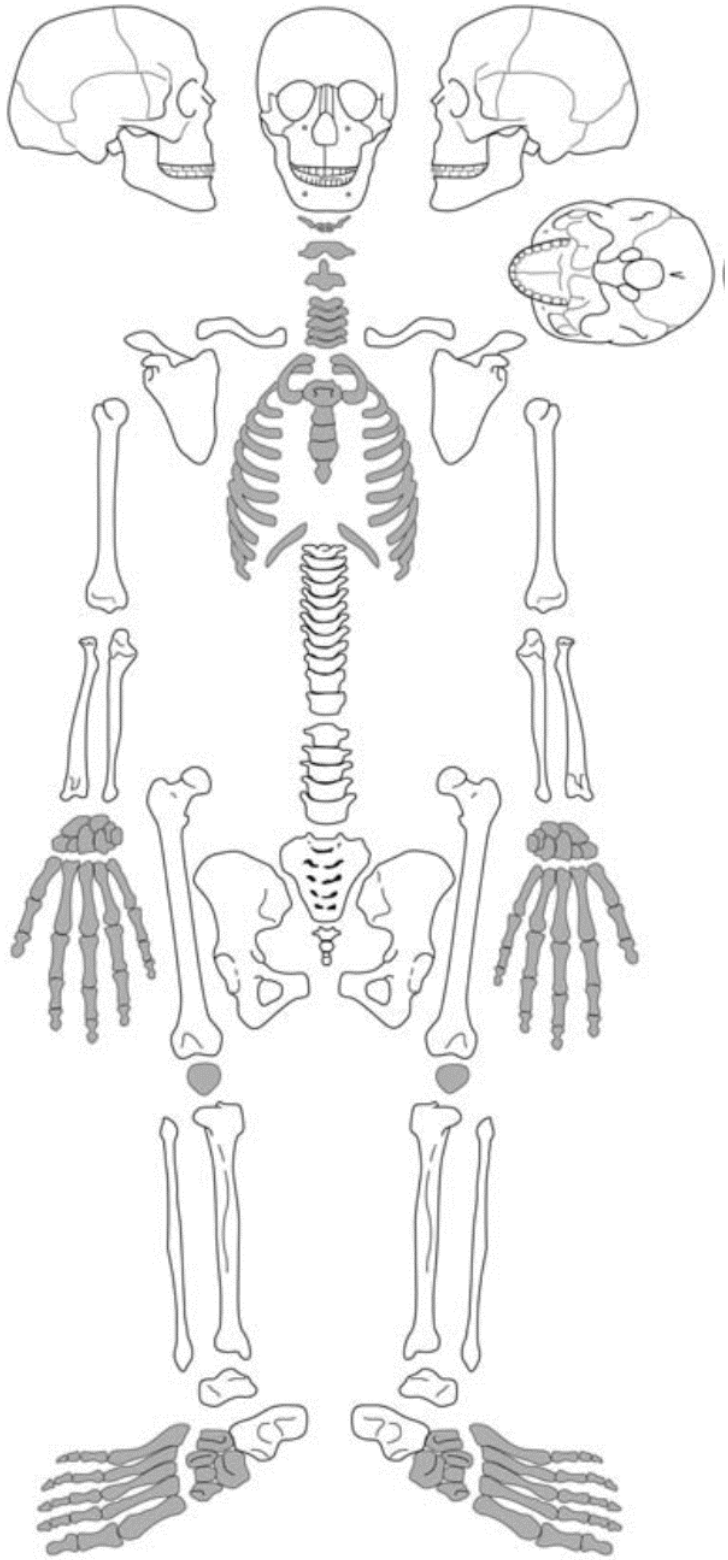
Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%__ >75%__

Photograph available	N
Plan drawing available	Y

Presence of persistent / labile joints

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		N
Lumbar spine		Y
Sacro-lumbar joint, sacro-iliac joint		N
Ankle, tarsals, talus, calcaneus		N
Knee (more persistent than hip and ankle)		N
Tibiofemoral joint		N
Humeroulnar joint		Y
	Hyoid	?
	Costo-sternal articulations	?
	Cervical intervertebral joints	?
	Scapulo-thoracic connection	?
	Joints within the hand	N
	Hip/acetabulofemoral joint	N
	Patellae	?
	Distal joints of the feet	N
	Claviculosternal joint	?

After Gerdau-Radonic 2011, Knüsel 2014



Key: Labile elements/joints (in grey) and persistent elements/joints (in white)

Redrawn by Seán Goddard, Department of Archaeology, University of Exeter, from Figure 2 in Valentin and Le Goff (1998) cf Knüsel 2014

Skeleton Number: 5354 (Juvenile) **Site: Barrow Hills**

Observations

Comments on position of persistent joints:

Lumbar spine appears in original anatomical position on side.
Mandible appears in correct anatomical position with cranium.

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Vertebrae appear in original alignment.
Femoral head appears to have come out of acetabulum and rotated laterally, suggesting original void/lack of restriction around burial space or shrouding/covering.
Ribs have slumped in line with decomposition of torso.

Other comments:

Plan seems quite basic but may represent very fragmentary state of bones.
Right humerus appears to have moved from original anatomical position.

Skeleton Number: 5356 **Site: Barrow Hills**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Flat grave

Recorded burial position: Crouched, legs tightly flexed, orientated roughly north-to-south, on right facing roughly west

Recorded grave fill: Dug into natural gravel, filled with red-brown sandy loam

Conclusions:
Original burial position: Flexed on right

Restricted or empty burial space:

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%__ >75%__

Photograph available	N
Plan drawing available	Y

Presence of persistent / labile joints

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		N
Lumbar spine		N
Sacro-lumbar joint, sacro-iliac joint		N
Ankle, tarsals, talus, calcaneus		?
Knee (more persistent than hip and ankle)		Y
Tibiofemoral joint		Y
Humeroulnar joint		Y
	Hyoid	?
	Costo-sternal articulations	N
	Cervical intervertebral joints	N
	Scapulo-thoracic connection	N
	Joints within the hand	N
	Hip/acetabulofemoral joint	Y
	Patellae	N
	Distal joints of the feet	?
	Claviculosternal joint	N

After Gerdau-Radonic 2011, Knüsel 2014

Skeleton Number: 5356 **Site: Barrow Hills**

Observations

Comments on position of persistent joints:

Hip bones appear to have moved from original anatomical position.

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Some foot bones present in close proximity to supposed original position.

Other comments:

Plan quite basic – would benefit from identification of bone fragments depicted.
Excavator noted skeleton incomplete and interpreted probable damage to pit -> removed head and upper body.
Three ?thoracic ribs depicted in likely original anatomical position.

Skeleton Number: Shaft 27 **Site: Cissbury**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Flint mine shaft beneath apparently fallen chalk.

Recorded burial position: Flexed (also described as extended) but unclear if position resulted from fall or was deliberate. Situated across gallery entrance.

Recorded grave fill: Chalk blocks and chalk rubble.

Conclusions:
Original burial position: On left side, legs slightly flexed.

Restricted or empty burial space: Empty but filled with chalk debris over time/at time of collapse of shaft

Preservation	Degree of preservation: <25%_√_ 25-50%__ up to 75%__ >75%__
Completeness	Degree of completeness: <25%_√_ 25-50%__ up to 75%__ >75%__

Photograph available	Y
Plan drawing available	

Presence of persistent / labile joints

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		-
Lumbar spine		Y
Sacro-lumbar joint, sacro-iliac joint		Y
Ankle		Y
Knee (more persistent than hip and ankle)		N
Tibiofemoral joint		Y
Humeroulnar joint		Y
	Hyoid	N
	Costo-sternal articulations	-
	Cervical intervertebral joints	-
	Scapulo-thoracic connection	-
	Joints within the hand	Y
	Hip/acetabulofemoral joint	-
	Patellae	-
	Distal joints of the feet	Y
	Claviculosternal joint	Y

After Gerdau-Radonic 2011, Knüsel 2014

Skeleton Number: Shaft 27 **Site: Cissbury**

Comments on position of persistent joints:

Patellae absent and not visible in photographs – could be interpreted as lost during or post-excavation as some, more labile bones of feet are present.
Right pelvis appears in original anatomical position.
Right humerus could be in original anatomical position but appears supinated. Right radius or ulna flexed 90^{0} across abdomen.
Right tibia and femur appear in articulation.

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Hyoid (body) present in skeletal archive though unclear where found, also mandible, rib cage, but patellae absent and not visible in photographs.

Other comments:

Excavator describes position as 'knees flexed, thighs crossed' and photos taken at regular intervals. In situ photo shows flexed leg. Photo by Bickerton of skeleton partially excavated shows leg extended – angle of photos or moved?
Excavator interpreted death due to falling chalk blocks. Trauma to skull in several places.
Remaining finger and toe bones in gallery fill. Absence of connections does not necessarily lead to interpretation of secondary burial location. Could be due to circulation of animals or collapses of surroundings or human intervention, generally a long time after deposition when all ligaments have disappeared (Duday, 2009:28).
Right ribs have flattened and fallen inferiorly from original anatomical position.
A number of skeletal elements lost from archive in intervening years, especially long bones.

Skeleton Number: Shaft VI **Site: Cissbury**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Discrete grave within flint mine shaft, surrounded by chalk blocks, 18ft deep in shaft, 30ft deep.

Recorded burial position: Contracted, orientated south-to-north, on right side, facing east. Knees ½ ft from chin, lower legs bent on upper, forearms at right angles to spine.

Recorded grave fill: Chalk rubble infill c.2ft

Conclusions:
Original burial position: Flexed on right, tightly ?bound or infilled
Restricted or empty burial space: Restricted

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%__ >75%__

Photograph available	Y
Plan drawing available	N

Presence of persistent / labile joints

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		
Lumbar spine		Y
Sacro-lumbar joint, sacro-iliac joint		Y
Ankle		Y?
Knee (more persistent than hip and ankle)		Y
Tibiofemoral joint		Y
Humeroulnar joint		
	Hyoid	
	Costo-sternal articulations	
	Cervical intervertebral joints	
	Scapulo-thoracic connection	
	Joints within the hand	
	Hip/acetabulofemoral joint	Y
	Patellae	N
	Distal joints of the feet	Y
	Claviculosternal joint	

After Gerdau-Radonic 2011, Knüsel 2014

Skeleton Number: Shaft VI **Site: Cissbury**

Observations

Comments on position of persistent joints:

Presence of patellae, atlanto-occipital joint, ankle and tarsals unclear from photograph. Mandible in correct anatomical position -> original position.

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Difficult to identify labile joints from photograph. Left femoral head in original anatomical position within acetabulum -> original position. Left foot in original anatomical position.

Other comments:

Presence of chalk blocks within grave fill suggests original position largely maintained. Left arm overlays ribs ->original position. Left humerus out of position – slipped down? Left ribs have slumped inferiorly. Left scapula fallen inwards? Progressive closure of angles between limb segments? Compare to Whitehawk semi-prone burials.

Skeleton Number: Sk3567 (Child) **Site: Itchen Farm**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Non-monumental flat grave (oval)

Recorded burial position: Crouched, orientated east-to-west, on right, facing north

Recorded grave fill: Soil with flints, large sarsen at feet, charcoal on north side of body

Conclusions:
Original burial position: Flexed on right

Restricted or empty burial space:

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%__ >75%__

Photograph available	Y
Plan drawing available	Y

Presence of persistent / labile joints

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		N
Lumbar spine		N
Sacro-lumbar joint, sacro-iliac joint		N
Ankle, tarsals, talus, calcaneus		N
Knee (more persistent than hip and ankle)		N
Tibiofemoral joint		Y?
Humeroulnar joint		Y?
	Hyoid	N
	Costo-sternal articulations	N
	Cervical intervertebral joints	N
	Scapulo-thoracic connection	N
	Joints within the hand	N
	Hip/acetabulofemoral joint	N
	Patellae	N
	Distal joints of the feet	Y
	Claviculosternal joint	N

After Gerdau-Radonic 2011, Knüsel 2014

Skeleton Number: Sk3567 (Child) **Site: Itchen Farm**

Observations

Comments on position of persistent joints:

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Ribs have flattened and fallen inferiorly.

Other comments:

Very poor preservation. Cranium crushed post-mortem, appears located at edge of grave which is ?sloping. Upper and lower limbs appear to be largely in original position, lying on side. Lower limbs restricted by position of sarsen stone. Left upper limb overlies some ribs. Report erroneously describes body as lying on its left on page 3 but correctly states it as lying on its left on page 52, the osteo report.

Skeleton Number: 2079 **Site: Monkton Minster**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Sub-rectangular non-monumental grave

Recorded burial position: Crouched, orientated east-to-west on right facing north.

Recorded grave fill: Steeply sloping sides, concave but undulating base, badly decayed. Overall space far greater than required for skeleton.

Conclusions:
Original burial position: Flexed on back. Bound?

Restricted or empty burial space: Original void, filled over time

Preservation	Degree of preservation: <25%__ 25-50%_√__ up to 75%__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%_√_ up to 75%__ >75%__

Photograph available	Y
Plan drawing available	Y

Presence of persistent / labile joints

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		N
Lumbar spine		N
Sacro-lumbar joint, sacro-iliac joint		N
Ankle, tarsals, talus, calcaneus		N
Knee (more persistent than hip and ankle)		N
Tibiofemoral joint		N
Humeroulnar joint		Y
	Hyoid	N
	Costo-sternal articulations	?
	Cervical intervertebral joints	N
	Scapulo-thoracic connection	N
	Joints within the hand	N
	Hip/acetabulofemoral joint	N
	Patellae	N
	Distal joints of the feet	?
	Claviculosternal joint	N

After Gerdau-Radonic 2011, Knüsel 2014

Skeleton Number: 2079 **Site: Monkton Minster**

Observations

Comments on position of persistent joints:

Only observable persistent joint is humeroulnar.

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Other comments:

Absence of diagnostic joint articulations and fragmentary state of remains make analysis difficult.
?slumping of cranium possibly indicative of original void
Plan gives impression torso was laid on its back with legs to side, evidenced by lateral flattening of ribs. If buried on side in this sloping grave, if unfilled, the rib cage and left arm would be more likely to remain in that position due to gravity rather than falling backwards.

Skeleton Number: F602 **Site: Mount Farm**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Oval barrow pit (shallow) within ring ditch

Recorded burial position: Crouched on left, head to south-east

Recorded grave fill: Reddish-brown loam (sand 40%, silt 40% & a little clay 20%)

Conclusions:
Original burial position: Flexed on side but torso fell back during decomposition, affected by burial space, or flexed on back, legs up, fell to side

Restricted or empty burial space:

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%__ >75%__

Photograph	
Plan drawing	Y

Persistent/labile joints present/in record

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		N
Lumbar spine		Y
Sacro-lumbar joint, sacro-iliac joint		Y
Ankles: tarsals, talus, calcaneus		N
Patello-femoral joint (more persistent than hip and ankle)		Y
Tibiofemoral joint		Y
Humeroulnar joint		Y?
	Hyoid	N
	Costosternal articulations	Y?
	Claviculosternal joint	?
	Cervical intervertebral joints	N
	Scapulo-thoracic connection	?
	Hand: carpals, metacarpals, phalanges	N
	Hip: acetabulofemoral joint	Y
	Patellae	Y
	Foot: tarsals, metatarsals, phalanges	N

Skeleton Number: F602 **Site: Mount Farm**

Observations

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Right femoral head appears to have popped out of acetabulum and on plan right femur appears broken (ante- or post-mortem?).
Left femur appears to be in original position but obscured by pelvis on plan.
Left patella in situ, rib cage fallen anteriorly, spinal column in segments, hands and feet absent – indicates possible removal or movement of body after decomposition, or have hands fallen into pelvic basin?

Comments on position of persistent joints:

Lumbar spine and left knee joint appear to be in situ.
Hard to make out upper limb bones from plan.
Vertebrae depicted with spinous processes to the side – implies flexed on side, but ribs imply flexed on back.

Other comments:

Lateral flattening of rib cage suggestive of burial position on back, legs upright then fell to side, however, scapula backwards indicating burial on side?
Right upper limb laid across and legs originally flexed up or sitting position? Compare to other sitting burials.
Fall of right ribs to right – due to decomposition of costo-sternal ligaments (faster than costo-transverse).

Skeleton Number: 1 (north-east) **Site: Nutbane**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Long barrow mortuary enclosure

Recorded burial position: Crouched, orientated east-to-west on left side, facing south. Legs flexed, skull facing backwards.

Recorded grave fill: Skeletons 1, 2 & 3 at Nutbane interpreted by excavator as buried contemporaneously on layer of brushwood (scatter of decayed wood) and covered with soil which fell sporadically also into the bottom of nearby ditches, beneath think chalk cairn.

Conclusions:
Original burial position: Flexed on back, legs fell to left
Restricted or empty burial space: Original void, gradually filled, shrouded, head rest

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%_√_
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%__ >75%_√_
Photograph	Y
Plan drawing	Y

Persistent/labile joints present/in record

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		N
Lumbar spine		Y
Sacro-lumbar joint, sacro-iliac joint		Y
Ankles: tarsals, talus, calcaneus		Y
Patello-femoral joint (more persistent than hip and ankle)		Y
Tibiofemoral joint		Y
Humeroulnar joint		
	Hyoid	N
	Costosternal articulations	N
	Claviculosternal joint	
	Cervical intervertebral joints	Y
	Scapulo-thoracic connection	N
	Hand: carpals, metacarpals, phalanges	N
	Hip: acetabulofemoral joint	Y
	Patellae	Y
	Foot: tarsals, metatarsals, phalanges	N

Skeleton Number: 1 (north-east) **Site: Nutbane**

Observations

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Clavicles appear not to be in original position, having moved vertically. Verticalisation of clavicles is a consequence of transversal compression at the shoulders, only occurs when body in very narrow coffin or wrapped in shroud. Shoulders pushed upward, forward and towards interior (Duday 2009, 35?) - > evidence of restricted burial space.

Comments on position of persistent joints:

Cranium noted by excavator to be facing backwards and interpreted as having been accidentally moved by pallbearers inserting later burials into enclosure, post-skeletonisation of Skeleton 1. Alternative explanation (assuming gradual rather than immediate infilling of mortuary enclosure) may be that due to slightly sloping surface of mortuary enclosure or original support, when atlanto-occipital joint perished cranium rolled from its original position. Could also have been affected by an original sitting position of the corpse. Mandible out of original position to north of cranium on plan. This position is typical following decomposition of perishable element supporting head, eg cushion, wooden head rest (Duday 2009, 47). Lower right ribs across spinal column?

Other comments:

Factors affecting fill: gravity, volume, small mammal disturbance, especially worms. Can be deferred (more common), ie staggered or progressive, replaces organic elements as they decompose (Duday 2009). Right arm to right side of body rather than across it, giving impression that upper torso may have fallen backwards; right leg remains in flexed sideways position although femoral head appears to have popped out of acetabulum, indicating unrestricted. Alternative explanation: buried on back with legs flexed up but later fell to left, Burial position – compare with Wor Barrow burials (recently reassessed). Sequence of fill – compare with similar sites.

Skeleton Number: 2 (south-east) **Site: Nutbane**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Long barrow mortuary enclosure

Recorded burial position: Crouched, orientated east-to-west on left side, facing south

Recorded grave fill: Skeletons 1, 2 & 3 at Nutbane interpreted by excavator as buried contemporaneously on layer of brushwood (scatter of decayed wood) and covered with soil which fell sporadically also into the bottom of nearby ditches, beneath thin chalk cairn.

Conclusions:
Original burial position: Flexed on back, knees bent up (bound?)
Restricted or empty burial space: Original void, gradually filled

Preservation	Degree of preservation: <25%__ 25-50%_√_ up to 75%__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%_√_ >75%__

Photograph	Y
Plan drawing	Y

Persistent/labile joints present/in record

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		
Lumbar spine		Y (R)
Sacro-lumbar joint, sacro-iliac joint		Y?
Ankles: tarsals, talus, calcaneus		Y (R)
Patello-femoral joint (more persistent than hip and ankle)		
Tibiofemoral joint		
Humeroulnar joint		
	Hyoid	N
	Costosternal articulations	Y
	Claviculosternal joint	
	Cervical intervertebral joints	N
	Scapulo-thoracic connection	Y?
	Hand: carpals, metacarpals, phalanges	Y
	Hip: acetabulofemoral joint	Y
	Patellae	Y
	Foot: tarsals, metatarsals, phalanges	N

Skeleton Number: 2 (south-east) **Site: Nutbane**

Observations

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Left patella found within soil fill of cranium – interpreted in report as moved by disturbance after burial and near to head due to position of legs (assume cranium fragmented prior to excavation for this to be possible). Rib cage slumped inferiorly from spinal column/pelvic girdle.

Comments on position of persistent joints:

Right forearm disarticulated at distal radius noted in report as post-burial disturbance, ie not simultaneous burials – post-mortem disturbance? Tight flexion of legs due to restriction from edge of mortuary enclosure/binding? Delayed filling of volume freed by decay of soft tissue = closing of intersegmental angles of body, eg arm and forearm (elbow). Often interpreted as buried in bags or tightly bound but difficult to prove (Duday 2009, 53). Mandible in situ.

Other comments:

Compare burial position with those at Wor Barrow (recently reassessed).

Skeleton Number: 3 (juvenile) **Site: Nutbane**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Long barrow mortuary enclosure

Recorded burial position: Crouched, orientated south-to-north, on right side facing east

Recorded grave fill: Skeletons 1, 2 & 3 at Nutbane interpreted by excavator as buried contemporaneously on layer of brushwood (scatter of decayed wood) and covered with soil which fell sporadically also into the bottom of nearby ditches, beneath thin chalk cairn.

Conclusions:
Original burial position: Flexed on right, shrouded, perhaps leather cover?
Restricted or empty burial space: Original void, gradually filled

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%_√_
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%__ >75%_√_
Photograph	Y
Plan drawing	Y

Persistent/labile joints present/in record

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		N
Lumbar spine		N
Sacro-lumbar joint, sacro-iliac joint		N
Ankles: tarsals, talus, calcaneus		N
Patello-femoral joint (more persistent than hip and ankle)		Y
Tibiofemoral joint		Y
Humeroulnar joint		Y?
	Hyoid	N
	Costosternal articulations	?
	Claviculosternal joint	N
	Cervical intervertebral joints	N
	Scapulo-thoracic connection	N
	Hand: carpals, metacarpals, phalanges	N
	Hip: acetabulofemoral joint	Y
	Patellae	N
	Foot: tarsals, metatarsals, phalanges	N

Skeleton Number: 3 (juvenile) **Site: Nutbane**

Observations

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Ribs: lower in situ, upper appear jumbled.

Comments on position of persistent joints:

Pelvis appears to be in original position. Right femoral head has popped out – not prevented by infilling. Left femur disarticulated. Cranium fragmentary and out of position (recorded by excavator as base uppermost) – due to head rest?

Other comments:

Upper torso appears crushed.

Skeleton Number: 4 (west) **Site: Nutbane**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Long barrow mortuary enclosure

Recorded burial position: Crouched, orientated south-to-north, on right side facing east

Recorded grave fill: Covered with soil which fell sporadically also into the bottom of nearby ditches beneath think chalk cairn.

Conclusions:
Original burial position: Flexed on right
Restricted or empty burial space: Original void, gradually filled

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%_√_
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%__ >75%_√_

Photograph	Y
Plan drawing	Y

Persistent/labile joints present/in record

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		Y
Lumbar spine		?
Sacro-lumbar joint, sacro-iliac joint		Y
Ankles: tarsals, talus, calcaneus		Y
Patello-femoral joint (more persistent than hip and ankle)		Y
Tibiofemoral joint		Y
Humeroulnar joint		Y
	Hyoid	Y
	Costosternal articulations	N
	Claviculosternal joint	?
	Cervical intervertebral joints	?
	Scapulo-thoracic connection	Y
	Hand: carpals, metacarpals, phalanges	?
	Hip: acetabulofemoral joint	Y?
	Patellae	Y
	Foot: tarsals, metatarsals, phalanges	Y

Skeleton Number: 4 (west) **Site: Nutbane**

Observations

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Patellae in original anatomical positions. Left hand bones present in archive. Appear beside left tibia (?) Unnatural position resulting from binding or other restriction? Bent backwards.

Comments on position of persistent joints:

Difficult to see neck/shoulder articulations clearly from photographs in detail but looks like cranium has fallen forward – could be connected to position on edge of hole IV which it overlays. Skeleton 4 covered Hole IV (fill = dark soil), limbs tipping into it at an angle. ?hole previously contained post which was removed to accommodate SK4. Left distal tibia and fibula slightly out of position? Progressive closure of angles between limb segments due to peripheral pressure of sediment?

Other comments:

Right femur has rotated and popped out of acetabulum – indicates legs may have been up in sitting/squatting position, or lower limbs recorded as tipping into hole IV at an angle – could result from movement following release of bodily fluids during decomposition of abdomen. Need to see ribs and spinal column more closely to identify if on back or side. Excavator felt bearers of Sk4 disturbed Sk I skull, Sk2 post-cranial bones, SK3 skull. Fussell's Lodge mortuary contained potentially allowed access after a burning event and subsequent erection of barrow sealed-off (Bayliss & Whittle 2007, 81; Smith & Brickley 2009, 63).

Skeleton Number: Burial 1 **Site: Offham**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Outer ditch of causewayed enclosure, shallow pit

Recorded burial position: Crouched on right side, orientated south-to-north, facing east

Recorded grave fill: Modern plough/fine brown friable soil with some large angular flints/angular chalk lumps in powdery chalk soil

Conclusions:
Original burial position: Flexed on right

Restricted or empty burial space: Original void, infilled over time. ?clothed or shrouded

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%_√_ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%_√_ >75%__

Photograph available	Y
Plan drawing available	Y

Presence of persistent / labile joints

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		?
Lumbar spine		Y
Sacro-lumbar joint, sacro-iliac joint		Y
Ankle, tarsals, talus, calcaneus		Y
Knee (more persistent than hip and ankle)		Y
Tibiofemoral joint		Y
Humeroulnar joint		y
	Hyoid	Y
	Costo-sternal articulations	?
	Cervical intervertebral joints	?
	Scapulo-thoracic connection	?
	Joints within the hand	Y
	Hip/acetabulofemoral joint	Y
	Patellae	Y
	Distal joints of the feet	Y
	Claviculosternal joint	?

After Gerdau-Radonic 2011, Knüsel 2014

Skeleton Number: Burial 1 **Site: Offham**

Observations

Comments on position of persistent joints:

Lumbar spine, sacrolumbar joint in correct anatomical position. Left femoral head has detached from acetabulum and humerus has detached from scapulohumeral joint –> body buried clothed or shrouded which prevented infilling.

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Cervical vertebrae and consequently cranium and mandible, cranium has slumped inferiorly due to original headrest of organic material? Patellae in original anatomical position. Mandible, hyoid, hands have moved from correct anatomical position. Could position of hands and feet be explained by burrowing? Right talus appears in articulation.

Other comments:

Ribs have flattened inferiorly/laterally. Lumbar vertebrae appear as segment in original articulation.

Skeleton Number: Burial 3 **Site: Park Farm Barrow**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Remnant sarsen cairn

Recorded burial position: Crouched, orientated south-west-to-north-east, on right facing south-east

Recorded grave fill: Below sarsen stones, soil fill

Conclusions:
Original burial position: Flexed on right, shrouded or bound (or sitting then fell to side?)

Restricted or empty burial space:

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%_√_ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%_√_ >75%__

Photograph	Y
Plan drawing	Y

Persistent/labile joints present/in record

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		Y
Lumbar spine		Y
Sacro-lumbar joint, sacro-iliac joint		N
Ankles: tarsals, talus, calcaneus		Y
Patello-femoral joint (more persistent than hip and ankle)		Y
Tibiofemoral joint		Y
Humeroulnar joint		Y
	Hyoid	N
	Costosternal articulations	N
	Claviculosternal joint	N
	Cervical intervertebral joints	N
	Scapulo-thoracic connection	N
	Hand: carpals, metacarpals, phalanges	Y
	Hip: acetabulofemoral joint	Y
	Patellae	Y
	Foot: tarsals, metatarsals, phalanges	Y

Skeleton Number: Burial 3 **Site: Park Farm Barrow**

Observations

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Position of atlanto-occipital joint suggests cranium in original position. Right hand appears in original articulation but left hand is out of position. Pelvis depicted as being absent on plan, however, pelvis fragments in archive include right acetabulum. On plan left femur is apparently in situ but ?articulation with acetabulum. Distal joints of feet (particularly left) appear in original anatomical position. Right femur appears to have rotated out of position. Both ankles appear in original anatomical position. Unclear if patellae present on plan, however both present in archive.

Comments on position of persistent joints:

Segment of 7 x vertebrae depicted on plan = some lumbar and thoracic or just thoracic?

Other comments:

Ribs appear to have been disturbed ?burrowing but broadly in expected position. Lower limbs overlay upper limbs.

Skeleton Number: 1964,2-6.7581 **Site: Staines**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Causewayed enclosure interior, shallow oval pit just outside inner ditch

Recorded burial position: Flexed, orientated north-to-south, on left facing east. Left hand to mouth. Described by excavator as 'carelessly arranged'.

Recorded grave fill: Soil (?), gravel surrounding

Conclusions:
Original burial position: Flexed on back
Restricted or empty burial space: Original void but restrictive ?clothing/binding of lower limbs

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%_√_ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%_√_ >75%__

Photograph	N
Plan drawing	Y

Persistent/labile joints present/in record

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		N
Lumbar spine		Y
Sacro-lumbar joint, sacro-iliac joint		N
Ankles: tarsals, talus, calcaneus		Y
Patello-femoral joint (more persistent than hip and ankle)		Y
Tibiofemoral joint		Y
Humeroulnar joint		Y
	Hyoid	N
	Costosternal articulations	N
	Claviculosternal joint	N
	Cervical intervertebral joints	N
	Scapulo-thoracic connection	N
	Hand: carpals, metacarpals, phalanges	Y?
	Hip: acetabulofemoral joint	N
	Patellae	Y
	Foot: tarsals, metatarsals, phalanges	Y

Skeleton Number: 1964,2-6.7581 **Site: Staines**

Observations

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Right (and left?) femoral head detached from location of acetabulum indicating original void. Scapulothoracic connection moved? Position of spine, ribs and pelvic girdle (fallen laterally), as depicted on plan, suggest corpse was laid on its back with legs flexed to side, Some upper ribs appear to overlay right clavicle. Patellae recorded in correct anatomical position. Ankles and tarsals appear in correct anatomical position. Hands out of position – burrowing?

Comments on position of persistent joints:

Atlanto-occipital joint appears disarticulated in plan although C1 and C2 (plus 4 other cervical vertebrae) present in archive when I assessed and also noted in original assessment (microfiche). Cervical vertebrae depicted as segment. However, cranium and mandible depicted together suggesting in original position on side. At odds with evidence for laying back? Evidence for body on back in wide space: collapse and disarticulation of pelvis, displacement of coxal bones, lateral rotation of femora (heads engaged in hip joint, fall of patellae from knees (Duday 2009).

Other comments:

?quality/accuracy of plan drawing of burial. Excavator records "the flexed body lying on left side had been rather carelessly arranged. The right arm was lying straight down towards the knees. The legs were lightly flexed, the left foot lying over the edge of the gravel" and "all bones present except for some of the small bones from the extremities but generally in very fragmentary condition" (microfiche)

Skeleton Number: G10 **Site: Staines Road, Shepperton**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Ditch segment next to causeway entrance of enclosure. Drawn lying in grave pit but excavator states unconvinced of existence of such a feature and more likely base of ditch.

Recorded burial position: Crouched in a possible grave pit or base of ring ditch segment. Orientated north-west-to-south-east on right facing south-west
Recorded grave fill:

Conclusions:
Original burial position: Flexed on right
Restricted or empty burial space: Original void, shrouded or covered?

Preservation	Degree of preservation: <25%__ 25-50%_√_ up to 75%__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%_√_ up to 75%__ >75%__

Photograph	Y
Plan drawing	Y

Persistent/labile joints present/in record

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		N
Lumbar spine		N
Sacro-lumbar joint, sacro-iliac joint		N
Ankles: tarsals, talus, calcaneus		N
Patello-femoral joint (more persistent than hip and ankle)		Y
Tibiofemoral joint		Y
Humeroulnar joint		N
	Hyoid	N
	Costosternal articulations	N
	Claviculosternal joint	N
	Cervical intervertebral joints	N
	Scapulo-thoracic connection	N
	Hand: carpals, metacarpals, phalanges	N
	Hip: acetabulofemoral joint	Y
	Patellae	Y?
	Foot: tarsals, metatarsals, phalanges	N

Skeleton Number: G10 **Site: Staines Road, Shepperton**

Observations

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Spinal column and rib cage absent – decayed in acidic soil? Moved from another location? Elements removed? Some elements removed, others washed away or carried away? Hands and feet absent, also vertebrae, ribs, pelvis.

Comments on position of persistent joints:

Only persistent articulations present are knee joints. Cranium and mandible have fallen laterally to the left following decomposition of atlanto-occipital joint – evidence of unrestricted space (has sloping edge which may have contributed to movement).

Other comments:

Skeleton Number: WS1/PB1 **Site: Waylands' Smithy**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Long barrow mortuary structure

Recorded burial position: Orientated north-to-south, on left facing west

Recorded grave fill: Sarsen cairn, comingled

Conclusions:
Original burial position: Sitting, leaning against rocks, then fell to left

Restricted or empty burial space: Original void, rocky surface, shrouded eg in leather?

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%__ >75%__

Photograph	Y
Plan drawing	Y

Persistent/labile joints present/in record

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		Y
Lumbar spine		Y
Sacro-lumbar joint, sacro-iliac joint		Y
Ankles: tarsals, talus, calcaneus		Y
Patello-femoral joint (more persistent than hip and ankle)		Y
Tibiofemoral joint		Y
Humeroulnar joint		Y?
	Hyoid	N
	Costosternal articulations	N
	Claviculosternal joint	N
	Cervical intervertebral joints	Y
	Scapulo-thoracic connection	N
	Hand: carpals, metacarpals, phalanges	N
	Hip: acetabulofemoral joint	Y
	Patellae	N
	Foot: tarsals, metatarsals, phalanges	Y

Skeleton Number: WS1/PB1 **Site: Waylands' Smithy**

Observations

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Cranium has fallen inferiorly to the left onto the rock supporting it, following decomposition of the soft tissues. The ribs have flattened inferiorly. The left femoral head appears to have come out of the acetabulum and rotated inferiorly – due to the body falling to the left after soft tissues decomposed? The foot bones are articulated and appear to be laying on adjacent rock in photograph but missing from plan from reassessment (Whittle *et al* 2007) although were included in the plan in the original assessment (Brothwell & Cullen 1991). Excluded for stratigraphic/contextual reasons? Right scapula has fallen posteriorly slightly – restriction of rocks

Comments on position of persistent joints:

Atlanto-occipito joint appears in articulation. Lumbar vertebrae are displaced – from photograph looks to result from gap in rocks on which body is laid.

Other comments:

Arms flexed. Sacrum may have displaced anteriorly slightly between iliac blades following decomposition of abdominal contents. This individual placed separately to rest of comingled assemblage at distal (north) end of mortuary structure. Deposited last? Significance of being singled out?

Skeleton Number: WS2/PB2 **Site: Wayland's Smithy**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Long barrow mortuary structure

Recorded burial position: Orientated north-to-south, on right facing east

Recorded grave fill: Sarsen cairn, comingled

Conclusions:
Original burial position: Flexed on right or sitting, then fell to right

Restricted or empty burial space: Original void, rocky surface, shrouded?

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%__ >75%__

Photograph	Y
Plan drawing	Y

Persistent/labile joints present/in record

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		N
Lumbar spine		N
Sacro-lumbar joint, sacro-iliac joint		N
Ankles: tarsals, talus, calcaneus		N
Patello-femoral joint (more persistent than hip and ankle)		Y
Tibiofemoral joint		Y
Humeroulnar joint		Y
	Hyoid	N
	Costosternal articulations	N
	Claviculosternal joint	N
	Cervical intervertebral joints	N
	Scapulo-thoracic connection	N
	Hand: carpals, metacarpals, phalanges	N
	Hip: acetabulofemoral joint	Y
	Patellae	N
	Foot: tarsals, metatarsals, phalanges	N

Skeleton Number: WS2/PB2 **Site: Wayland's Smithy**

Observations

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Mandible in articulation with cranium which has fallen forwards with decomposition of soft tissue at atlanto-occipital joint. Hands, patellae appear absent but likely results from comingling. Hip has fallen laterally. Femoral heads detached from acetabulae. Ribs have fallen inferiorly.

Comments on position of persistent joints:

Only right knee joint and left elbow joints present.

Other comments:

General fall to the right likely due to uneven surface below of sarsen stones and comingled bodies. Complicated picture due to nature of multiple burials.

Skeleton Number: I **Site: Whitehawk**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Within occupation layer of ditch D3 CIII

Recorded burial position: Semi-prone on left, head to north-west. Shoulders, chest were prone, right hand in front of abdomen, some finger bones imbedded in mud adhering to front of lumbar vertebrae. Left arm nearly straight and lay behind back, behind (south of) semi-prone pelvis. Right hip and knee acutely flexed (knee 3" from elbow) Left hip less acutely flexed. Both heels within 2" of pelvis.

Recorded grave fill: Occupation layer

Conclusions:
Original burial position: Flexed on left, prone shoulders and chest

Restricted or empty burial space: Empty at first, filled gradually or soon after burial before decomposition – would need more detail of labile joint articulations to investigate further.

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%__ >75%_√_
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%__ >75%_√_

Photograph	N
Plan drawing	Y (basic)

Persistent/labile joints observable/in record

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		Y
Lumbar spine		Y
Sacro-lumbar joint, sacro-iliac joint		Y
Ankles: tarsals, talus, calcaneus		Y
Patello-femoral joint (more persistent than hip and ankle)		Y
Tibiofemoral joint		Y
Humeroulnar joint		Y?
	Hyoid	N
	Costosternal articulations	-
	Claviculosternal joint	?
	Cervical intervertebral joints	Y
	Scapulo-thoracic connection	-

Skeleton Number: I **Site: Whitehawk**

	Hand: carpals, metacarpals, phalanges	Y
	Hip: acetabulofemoral joint	-
	Patellae	Y
	Foot: tarsals, metatarsals, phalanges	Y

Observations

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

‘Semi-prone’ pelvis – original position or later slump?
Right hip (and knee) acutely flexed.

Comments on position of persistent joints:

Shoulders and chest prone. Left arm nearly straight behind back – original placement or slippage due to unconfined space?
Both heels within 2” of pelvis – bound?
Or progressive closure of angles between limb segments on bare earth from original contracted position?

Other comments:

Treatment of this individual contrasts with that of other ‘semi-prone’ adult female at Whitehawk (Skeleton II).
Thrown or fell? Compares with recently found female 14-17 yrs at Early Neolithic monument in Berkshire, recorded as ‘flexed, predominantly prone but resting on right with arm partly behind back’; manipulated post-mortem (McKinley pers comm).
Compares with mid-Neolithic burial at Les Plots at Berriac, Aude, France (Duday (2009, 38-40), primary burial, prone, head to left, right hand holding right knee, bones of hand in connection and distal phalanges of fingers pushed straight into ground against upper part of tibia. Likely earth was in contact with corpse and was obstacle to prevent bones from falling -> burial in a filled space.
Also compares to Iron Age pit burial at Durotriges (Karina Gerdau Radonic, pers comm): flexed on right, ‘semi-prone’, flexed, pronated, normal void in front of body, left had bones detached, right hand under knee, forearm in front of abdomen, natural-looking dislocations, movement from gravity, patella in normal position so held by something -> probably filled space as no evidence for empty space.

Skeleton Number: Grave 100 **Site: Yabsley Street**

ARCHAEOTHANATOLOGICAL ANALYSIS

Burial context: Non-monumental flat grave

Recorded burial position: Flexed (not tightly), orientated east-to-west, facing south, head facing to knees, arms flexed, feet together, spine touched north edge of grave, large empty area below feet.
Recorded grave fill: Flat base, northern side, partly defined by a split oak plank apparently retaining structure holding collapse of soft sand rather than a coffin/cist. Grey-black sand fill, mottled yellow with charcoal flecks and some burnt flint.

Conclusions:
Original burial position: Flexed on left
Restricted or empty burial space: Original void, ?shrouded

Preservation	Degree of preservation: <25%__ 25-50%__ up to 75%_√__ >75%__
Completeness	Degree of completeness: <25%__ 25-50%__ up to 75%_√_>75%__
Photograph	Y
Plan drawing	Y

Persistent/labile joints present/in record

Persistent joints (more resistant to disarticulation)	**Labile joints (unstable/changeable)**	
Atlanto-occipital joint		N
Lumbar spine		Y?
Sacro-lumbar joint, sacro-iliac joint		Y?
Ankles: tarsals, talus, calcaneus		Y
Patello-femoral joint (more persistent than hip and ankle)		Y?
Tibiofemoral joint		?
Humeroulnar joint		N
	Hyoid	N
	Costosternal articulations	N
	Claviculosternal joint	N
	Cervical intervertebral joints	N
	Scapulo-thoracic connection	N
	Hand: carpals, metacarpals, phalanges	Y?
	Hip: acetabulofemoral joint	Y?
	Patellae	N
	Foot: tarsals, metatarsals, phalanges	?

Skeleton Number: Grave 100 **Site: Yabsley Street**

Observations

Which labile joints present are judged to have moved from their original anatomical position and possible explanations:

Excavation report records presence of left hand but difficult to identify on photographs. Report also mentions presence of feet, possibly indicative of original primary burial position.
Preservation too poor to judge whether femoral head within acetabulum.

Comments on position of persistent joints:

Other comments:

Excavator noted that acidic soil had destroyed most of the major limbs, spine, mandible and teeth. Cranium recorded as facing knees, indicating possible post-mortem inferior slumping. Cranium originally support by head rest?

APPENDIX 6 – ARCHAEOTHANATOLOGICAL ASSESSMENT CHECKLIST

Archaeothanatology Checklist

Labile joints/elements:

- Unstable or loose, when not supported by soft tissue attachments
- Disarticulate relatively quickly (usually weeks)
- Their retention in anatomical position requires support of surrounding burial soil
- Maintenance of these articulations indicates subsequently undisturbed burial (esp hands, hyoid, mandible, rib cage, patellae)

Persistent joints/elements:

- More resilient to disarticulation

Observations:

- Flexed hands/wrists often fall into pelvic basin
- Manubrium and corpus sterni fall into thoracic cavity and claviculae
- Rib cage flattens and moves inferiorly
- Heads of ribs rise because costo-sternal ligaments decompose quicker than costo-transverse ligaments. When laid on back, 1st rib lies on 2nd, 2nd on 3rd, etc. When laid on stomach, lower ribs rest on upper
- Sacrum displaces anteriorly between iliac blades of os coxae into space left by decomposition of abdominal contents
- Verticalisation of sacrum indicates restricted, eg tightly shrouded
- Collapse of pelvic girdle: if body on its side, os coxae uppermost falls into pelvic cavity
- When hip musculature decomposes, os coxae opens out laterally and separates at pubic symphysis, especially in empty space container
- Mandible descends on to superior-most ribs when TMJ perishes; likewise hyoid.
- Tarsals, metatarsals and phalanges remain in articulation while talus and tibia generally disarticulate. Foot elements articulate more persistently than ankle joint. Position of foot elements influenced by footwear
- 'Wall effect' leaves limbs or extremities in unusual positions in absences of supporting sediment and created by object or part of grave not preserved
- Partial dislocation of segment of vertebrae may indicate collapse due to decay of perishable supports beneath burial. Most common is depression of claviculae leaving in oblique orientation, eg when tightly shrouded
- Cranium, atlas and axis disarticulate as a unit
- If cranium is on a support in an empty space it tends to roll back (posteriorly) under decomposition

- Vertebral column often dislocates in subsections of 2-5 vertebrae, caused by destruction of ligaments
- Joints of more inferior cervical vertebrae disarticulate more quickly than superior ones
- Evidence of decapitation usually in 2nd-5th vertebrae
- Lateral fall of ribs indicates decomposition of costosternal ligaments (faster than costotransverse)

Burial context – open space:

- If body on side, scapula and os coxae can topple over in back of the trunk and be found on the edge
- Sacrum, sternum, ribs, vertebrae (esp cervical and inferior lumbar) and craniofacial region often considerably displaced (could be due to inundation from rising water table)

Burial context – filled space (earth grave):

- On bare earth, contracted position – peripheral pressure of sediment can induce progressive closure of angles between limb segments (looks tightly bound but isn't). 'Hypercontracted': large long bones in contact with each other.
- Factor affecting fill: gravity, volume, small mammal disturbance esp worms.

Burial context descriptions and criteria for their identification

Burial context	Description	Criteria
Loose, non-durable wrapping/no wrapping	Body buried without container or loosely wrapped in quickly decomposing material	Internal or no space. No constriction, no evidence grave cut wider than the constriction
Tight non-duration wrapping	Body tightly wrapped in quickly decomposing material	Internal space only, constriction
Tight durable wrapping	Body tightly wrapped in slowly decomposing material	Limited external space, constriction and disarticulation of patellae medial to knees + wall effect to shape of body
Narrow coffin	Body placed in hard narrow container that decomposed slowly	Limited external space, constriction and disarticulation of patellae medial to knees + wall effect to shape of body
Wide coffin	Body placed in hard wide container that decomposed slowly	Internal & external space, no constriction, disarticulation of pelvis, lateral rotation of femora lateral fall of patellae (Duday & Guillon 2006)

After Harris & Tayles, 2012

Anatomical Terminology

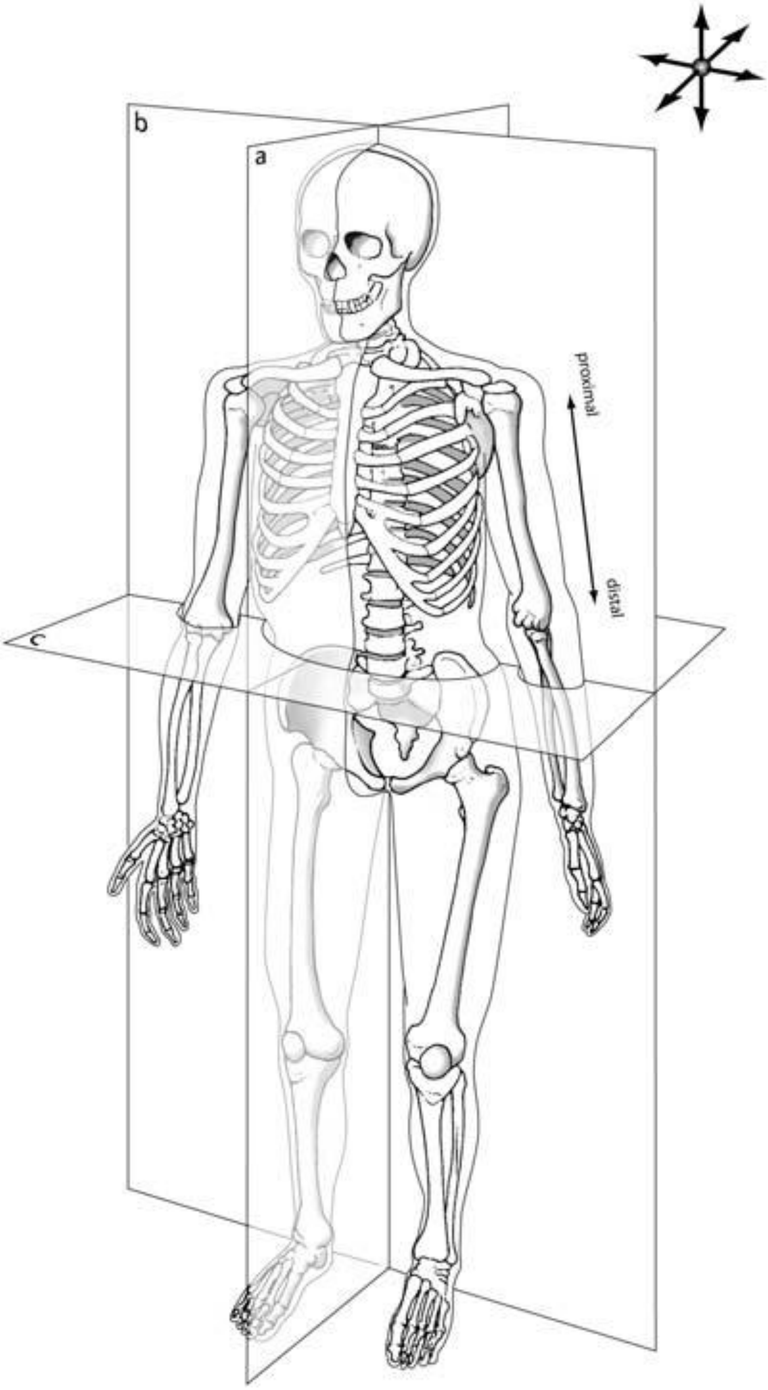
Cranium	) Skull
Mandible	)

Cervical	)
Thoracic	)
Lumbar	) Vertebrae
Sacral	)
Coccygeal	)

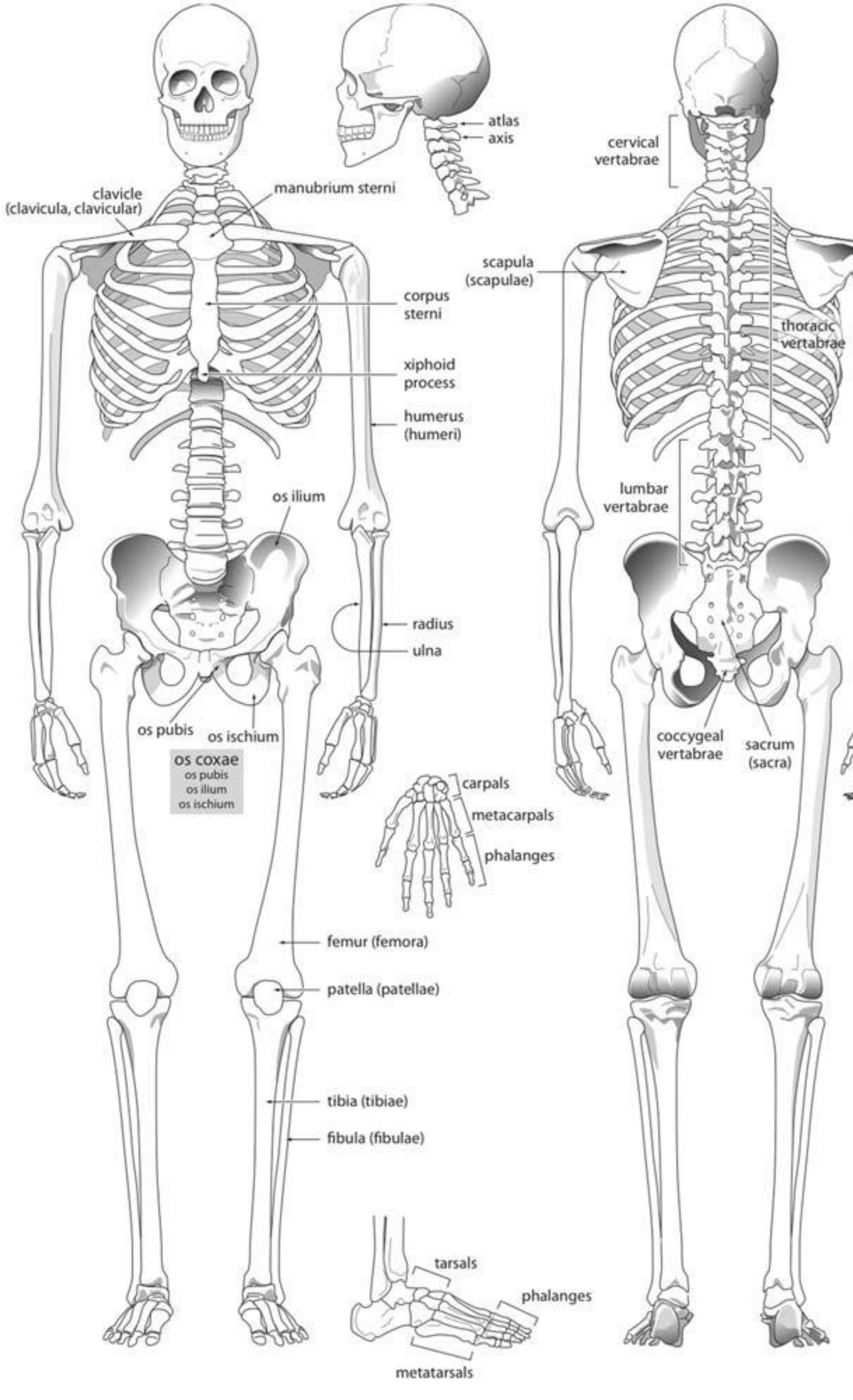
Pectoral girdle (clavicle & scapula)	) Appendicular skeleton
Pelvic girdle (os coxae)	)

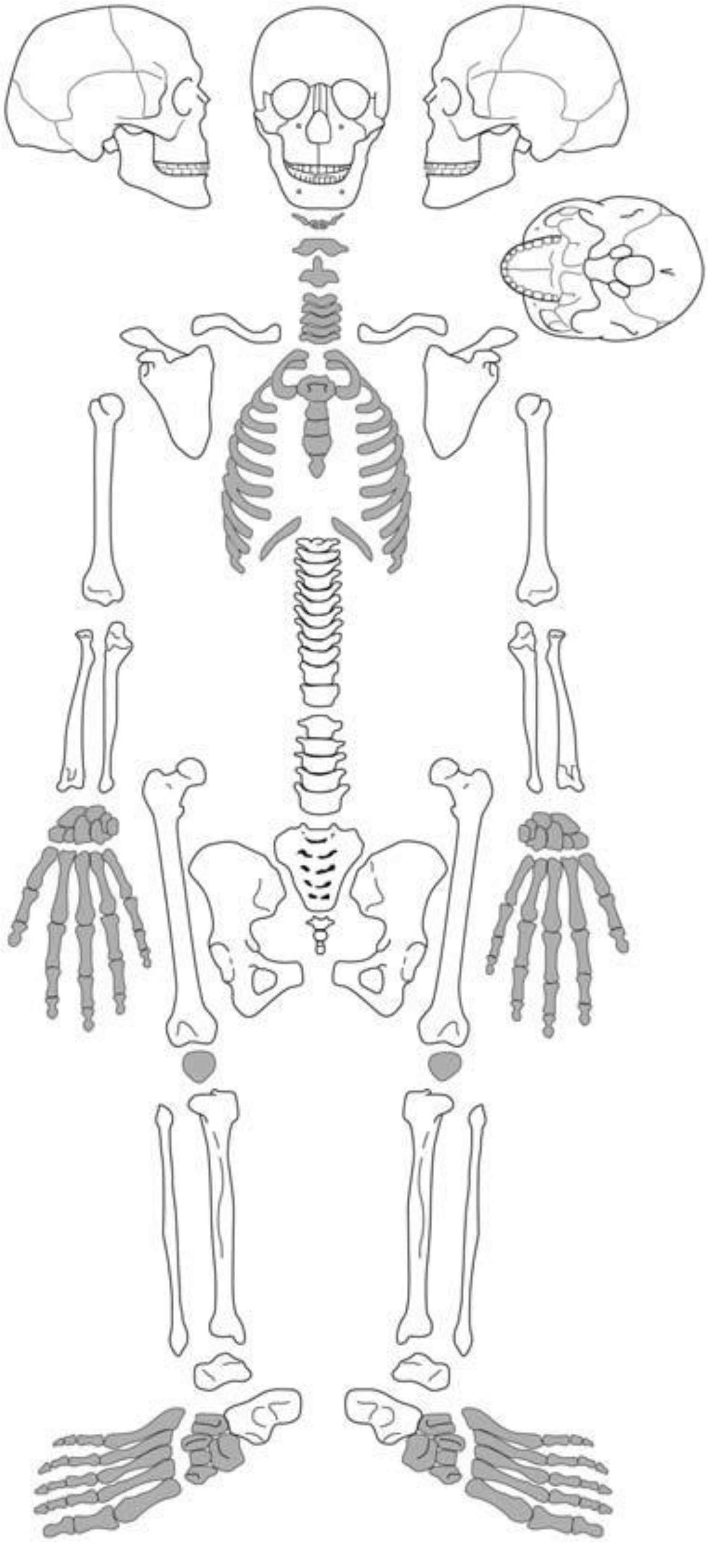
Arm (humerus)	)
Forearm (ulna & radius)	) Upper limb
Wrist (carpals)	)
Hand (metacarpals & phalanges)	)

Thigh (femur)	)
Leg (tibia & fibula)	) Lower limb
Ankle (tarsals)	)
Foot (metatarsals & phalanges)	)



Extended vertebral column with the upper and lower limbs in extension comprises standard anatomical position. The left forearm and hand is depicted in a pronated position (not standard anatomical position), while the right is held in supination (standard anatomical position). The median plane (a) divides the body into right and left sides from medial (i.e. towards the median plane or mid-line of the body) to lateral (i.e. away from the median plane or mid-line of the body), while the coronal plane (b) separates it into anterior/ ventral and posterior/dorsal halves. The transverse plane (c) divides the body into superior (uppermost surfaces, towards the cranium) and inferior (towards the feet or beneath another structure) portions. Right and left are based on 'patient', not observer's right and left. Image prepared by Seán Goddard, Department of Archaeology, University of Exeter.


atlas
axis
cervical vertabrae
clavicle (clavicula, clavicular)
manubrium sterni
scapula (scapulae)
corpus sterni
thoracic vertabrae
xiphoid process
humerus (humeri)
lumbar vertabrae
os ilium
radius
ulna
os pubis
os ischium
coccygeal vertabrae
sacrum (sacra)
os coxae
os pubis
os ilium
os ischium
carpals
metacarpals
phalanges
femur (femora)
patella (patellae)
tibia (tibiae)
fibula (fibulae)
tarsals
phalanges
metatarsals



The labile elements/joints of the skeleton (in grey) and persistent elements/joints (in white). Redrawn by Seán Goddard, Department of Archaeology, University of Exeter, from Figure 2 in Valentin and Le Goff (1998)

APPENDIX 7: RECORDED BURIAL ORIENTATIONS AND MY INTERPRETATIONS FROM PLANS

Site/skeleton	When excavated	Description in report	My description*	Comments
Nutbane 1	1959	East-to-west on left	East-to-west on left, facing south	
Nutbane 2	1959	East-to-west on left	East-to-west on left, facing south	
Nutbane 3	1959	South-to-north on right	South-to-north on right, facing east	
Nutbane 4	1959	South-to-north on right	South-to-north on right, facing east	
Itchen Farm	2006	East-to-west on right	East-to-west on right, facing north	Description incorrect in main text, recording skeleton lying on left, but correct in human remains report.
Offham	1976	On side facing east	South-to-north on right, facing east	
Whitehawk I	1932-33	On left, head to north-west	North-west-to-south-east, facing north-east	
Whitehawk II	1932-33	On right, head to south	South-to-north on right, facing east	
Whitehawk III	1935	Head to east, face to north	East-to-west on right, facing north	
Whitehawk IV	1935	Head to south, face to east	South-to-North on right, facing east	
Blackpatch Barrow 3 (female)	1922-32	On left, head to north, face to east	North-to-south on right, facing east	
Blackpatch Barrow 3 (male)	1922-32	On left, head to north, facing east	North-to-south on right, facing east	
Cissbury Shaft H	1875	Face towards west	?	
Cissbury Shaft 6	1878	On right, face to east	South-to-north on right, facing east	
Cissbury Shaft 27	1961			

Staines	1961-63	On left	North-to-south on left, facing north-east	
Shepperton	1989	On right, head to north-west	North-west-to-south-east on right, facing south-west	
Nethercourt Farm	1949	On left	North-east-to-south-west, facing south-east	
Monkton Minster	1994-95	Head east, facing north	East-to-west on right, facing north	
Park Farm 1	1986-90	Not described	South-west-to-north-east on left, facing north-west	
Park Farm 2	1986-90	Not described	South-west-to-north-east on right, facing south-east	
Park Farm 3	1986-90	Not described	South-west-to-north-east on right, facing south-east	
[Berkshire]	2018	North-to-south on right (pers comm J.McKinley)		
Yabsley Street	2007	East-to-west on left, body facing south	East-to-west on left, facing south	
Ascott-under-Wychwood Deposit A1		On right, facing south	West-to-east on right, facing south	
Ascott-under-Wychwood Deposit A2		Flexed sideways to right (?seated)	South-to-north on right	
Ascott-under-Wychwood Deposit C		Angled to east, facing south (cranium only)	Facing south	
Ascott-under-Wychwood Deposit D1			South-to-north?	Orientation estimated from plan
Ascott-under-Wychwood Deposit D2			South-to-north?	Orientation estimated from plan
Ascott-under-Wychwood Deposit E1		East-to-west on right, facing north	East-to-west on right, facing north	
Barrow Hills 5354		Grave north-to-south, body on right	South-to-north on right, facing east	Orientation in report appears to apply to grave rather than position of body

Barrow Hills 5356		Grave north-to-south, body on right	North-east-to-south-west on right, facing north-west	Orientation in report appears to apply to grave rather than position of body (latter difficult to ascertain)
Waylands Smithy 6		-	South-to-north on left, facing west	Orientations taken from plans in reassessment (ref)
Waylands Smithy 7		-	South-west-to-north-east on right, facing south-east	Orientations taken from plans in reassessment (ref)
Waylands Smithy 11		-	South-to-north on right, facing east	Orientations taken from plans in reassessment (ref)
Waylands Smithy 12		-	South-to-north on right, facing east	Orientations taken from plans in reassessment (ref)
Mount Farm	Late 70s	On left, head to south-east	South-to-north on left, facing east	

*ie 'East-to-west' = head to east, feet to west

**descriptions align except where indicated in Comments column

APPENDIX 8 – BRIGHTON AND HOVE PREHISTORIC PEOPLES RESEARCH PROJECT OSTEOLOGICAL REPORT

THE BRIGHTON AND HOVE PREHISTORIC PEOPLES RESEARCH PROJECT

An assessment of the human remains

Dawn Cansfield, Andy Maxted, Paola Ponce

February 2017

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THE BRIGHTON AND HOVE PREHISTORIC PEOPLES PROJECT
AN ASSESSMENT OF THE HUMAN REMAINS

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INTRODUCTION

The human skeletal remains of a total of 28 individuals were studied during April-September 2016. These were housed at the Royal Pavilion and Museums, Brighton and Hove. Human remains resulted from excavations and incidental finds recovered from the Brighton and Hove area between the 1920s and 1990s.

A number of the human remains in the collection were found during local excavations, such as those at Shoreham Camp in 1916, Ditchling Road in 1921 and Slonk Hill in 1969. Human remains resulting from incidental findings include a number found during the course of council building work in Brighton and Hove between the 1920s and 1930s, such as those from East Brighton Golf Club, Roedean Crescent and the Blackrock coastguard's station. Other human remains were donated following their discovery during private building work, for example the skeleton from a property in Surrenden Road, found in 1928 during building works for a tennis lawn, and that from Woodingdean which was found by a home owner during the construction of a sun terrace to the side of his house. Additionally, human remains had been donated by the police in the 1950s, such as those from Eldred Avenue, and a small proportion of further human remains were of uncertain provenance.

The dating of the majority of these human remains was uncertain apart from two of the skeletons. The skeleton recovered from the Mile Oak Farm excavations in Portslade between 1989-1990 was carbon dated originally to the middle-to-late Iron Age but subsequently, on further sampling, to the late Bronze Age; and the skeleton from the Varley Halls excavation in 1992 was carbon dated to the middle-to-late Bronze Age. In the remainder of the cases the information about dating was originally derived from the burial position of the skeleton, its orientation within the grave, any grave goods found in association with the burials and, in a number of cases, physical features of the skull had been used to ascribe individuals to a particular prehistoric era using methods prevalent in the early 20th century. A summary of the dates previously assigned is shown in Table1.

	Neolithic	**Neolithic/ Bronze Age**	**Bronze Age**	**Iron Age**	**No date assigned**
n	2	3	11	2	10

Table 1: showing the composition of the population

The amount of information available for relative dating was variable. For instance, skeleton I from the Slonk Hill excavations had been found in an oval pit, its skull to the north, facing east and the body laid on its left side, the right hand in front of its face, knees flexed; there were potsherds and a fossilised sea urchin associated with the burial which was relatively dated to the Iron Age. Conversely, the skeleton from the Patcham-Pyecombe boundary had not been examined *in situ* but was recorded as having been in a contracted position and was

described as having a 'long barrow type' skull, resulting in a Neolithic date having been allocated; no grave goods were recorded.
As a first step towards addressing the ambiguity of the dating evidence for the collection, a programme of radiocarbon dating, funded by the University of Winchester, is underway and dating has been undertaken for the skeletons from the following sites: R2430 London Road, Patcham, R3016 Surrenden Road, HATMP100001 Slonk Hill, R3027 Moulsecoomb, R2574 East Brighton Golf Club and R3330 Blackrock, the results of which are shown in Table 7. Dating of further individuals from the collection and analysis of the results is planned for 2017.

To summarise, the 28 human remains analysed in the present study ranged in assigned date from Neolithic to Iron Age.

MATERIALS AND METHODS

The assessment of these 28 skeletons was carried out by Dawn Cansfield with the assistance of Andy Maxted and the supervision of Dr Paola Ponce. The assessment consisted of estimating sex and age along with carrying out standard osteometric analysis for the purpose of calculating stature and assisting with the sex assessment. Finally, the presence of pathologies was noted and recorded. All this biographical data gathered on each skeleton was comprehensibly documented in a paper-based record along with digital photographs.

Sex Estimation

An assessment of the biological sex of the adult skeletons was made using multifactorial methods. Thus, a combination of osteometric and dimorphic traits of the pelvis, and skull were employed. The osteometric analysis was based on measurements taken on the humeral, radial and femoral heads, the bicondilar width, the maximum length of the clavicle and the width of the glenoid cavity of the scapula. These were estimated following Stewart (1979).

The dimorphic bones analysed were the pelvis and the skull but these were used whenever available, in other words depending on the degree of preservation and completeness. In the former, the ventral arc, the sciatic notch, the sub-pubic concavity, the ischiopubic ramus ridge, the greater sciatic notch and the pre-auricular sulcus were used according to Buikstra and Ubelaker (1994) and Bass (2005). In the skull, the nuchal crest, the supraorbital ridges, the mastoid process, the glabellar profile and the mental eminence were used according to Buikstra and Ubelaker (1994) and Bass (2005).

The sex categories assigned to all adult skeletons were male (M), probable male (?M), female (F), probable female (?F) or unknown (?) when the degree of incompleteness, poor preservation or ambiguous results prohibited definitive assignments to either sex. For the purpose of statistical analysis, "probable males" were grouped with males and "probable females" were grouped with females. The skeletons of newborn, infants and juvenile individuals were not assigned to any sex category.

Age Estimation

Age-at-death was established using standard osteological techniques. Multifactorial age-at-death assessments provide the most accurate results (Lovejoy 1985) and estimates of age were made using a combination of methods. These included the morphological changes observed in the pelvis such as the pubic symphysis (Brooks and Suchey 1990), and the auricular surface (Lovejoy et al 1985). Other methods included the development of the epiphyseal union of long bones (Scheuer and Black 2004), the eruption of teeth and dental development (Gustafson and Koch 1974 and Ubelaker 1989), and the measurements of long bone lengths (Maresh 1970, Scheuer et al, 1980). The age categories employed are summarised in Table 2.

Age category	Description	Month/Years
0	Foetus and neonate	Before birth- 11 months
1	Infant 1	12 months – 6 years
2	Infant 2	7 – 12
3	Juvenile	13 – 17
4	Young Adult	18 - 30
5	Prime Adult	31 - 45
6	Mature Adult	45 +
7	Adult	18 +
8	Sub-adult	<18

Table 2: showing the age categories employed

Stature estimation

Stature was calculated for adult individuals using the femur whenever possible. When this bone was broken, pathological or not present, the tibiae and fibulae were used instead. Alternatively when none of the lower limb bones were present, the humerus, radius, or ulna was used. Left side bones were preferred over right side bones whenever possible in both upper and lower limb bones.

The maximum length of the bones was measured with an osteometric board following the standards proposed by Buikstra and Ubelaker (1994) and the maximum stature was calculated using the equations of Trotter (1970).

Stature was estimated on adult individuals only and individuals with undetermined sex were not included in the analysis.

Pathology quantification

All significant gross pathology was assessed following the diagnostic criteria by Aufderheide and Rodríguez-Martín (1998) and Ortner (2003) and by supplementary references as required.

RESULTS

Demography

The 28 skeletons were divided into 24 adults, 3 sub-adults and 1 neonate. The former group included individuals whose age categories fell between 4-7 and sub-adult individuals included those of age categories 0-3. As shown in Table 3 there were 11% (3/28) sub-adult individuals aged 0-17 years compared with 86% (24/28) adults aged 18+ years.

Age category	Description	n
0= before birth-11 months	Foetus and neonate	1
1= 12 months-6 years	Infant 1	0
2= 7-12 years	Infant 2	0
3= 13-17 years	Juvenile	2
4= 18-30 years	Young Adult	14
5= 30-45 years	Prime Adult	4
6= 45+ years	Mature Adult	2
7= 4-6 age categories	Adult	4
8 = <18 years	Sub-adult	1
Total	All groups	28
Table 3: showing the age categories found		

Observations between adult males and females showed that their presence in the sample was fairly equal (Table 4). Of those adults for whom sex could be estimated, as a proportion of the overall group, 46% (13/28) were males and 36% (10/28) were females.

Age category	M+M?	F+F?	?
4= 18-30 years	9	6	0
5= 30-45 years	2	3	0
6= 45 + years	1	0	1
7= 4-6 age categories	1	1	1
Total	13	10	2
Table 4: showing the composition of the adult population Note: M+M? are all males and probable males grouped, F+F? are all females and probable females grouped, ? are all adults that could not be sexed.			

Stature

Stature estimation was possible in a fairly equal percentage of males and females. A total 67% (8/12) of adult males had at least one long bone well-preserved to estimate stature compared to 50% adult females (6/12).

The bone most commonly used for stature calculation in all adult individuals was the femur (n= 11) followed by the humerus (n=2), tibia (n=1).

As shown in Table 5, males were taller than the females. The average height for all men was 170.46 cm and that of the females was 155.16 cm although the former group showed more height variation.

Sex	n	Mean (cm)	Range (cm)	SD (cm)
M-M?	8	170.46	157-181	7.80
F-F?	6	155.16	147-164	7.25
Table 5: showing the adult stature				

PALAEOPATHOLOGY

From the total skeletal population assessed, 75% (21/28) of the skeletons showed evidence of being affected by some palaeopathological condition compared with 25% (7/28) that did not show any evidence of disease.

The conditions found within the skeletal sample were dental disease, trauma, congenital abnormalities, infectious diseases, joint disease, metabolic and neoplastic conditions.

The results obtained with the above-listed pathologies are presented and discussed in the order of prevalence as shown in Table 6.

Pathologies	Prevalence (n/N)
Dental disease	64% (18/28)
Trauma	39% (11/28)
Congenital anomalies	18% (5/28)
Infectious diseases	14% (4/28)
Joint disease	11% (3/28)
Metabolic conditions	4% (1/28)
Neoplastic conditions	4% (1/28)

Table 6: showing crude prevalence rates of all pathologies found within the population

Dental disease

Dental disease refers to any acquired or congenital pathology of the teeth. In the skeletal population those found within the first group included calculus, ante-mortem tooth loss, dental enamel hyperplasia, dental wear, caries and abscesses.

Congenital anomalies of the teeth included agenesis, retained teeth, fused teeth, rotated teeth and peg-shaped teeth. There were mandibular tori in skeletons R2315/3 Ditchling Road and HATMP100348 Slonk Hill II. These are bony outgrowths or bony excrescences arising along the midline of the mandible or palate. A number of factors have been postulated as causative of these tori including mechanical stress, diet, disease and congenital abnormality (Brothwell 1981).

Finally, skeleton HAMTP100399 was affected by an oroantral fistula (connection between the mouth and the maxillary sinus), which manifests as a small orifice that serves as a draining cloaca.

Trauma

Despite the many definitions, trauma can be defined as any extrinsic mechanism that causes injury to a living tissue of the body (Lovell 1997).

The evidence of trauma within the skeletal population consisted of several examples of Schmorl's nodes, musculoskeletal stress markers and spondylolysis along with single instances of osteochondritis dissecans and myositis ossificans traumatica.

Spondylolysis

Present day consensus supports the idea that spondylolysis is an acquired traumatic lesion and the consequence of a stress fracture, fatigue fracture or overuse injury occurring during growth. The combination of repeated extension and hyperflexion of the lumbar spine that exceeds the capacity of bone repair results in the separation of the vertebrae in two parts, the anterior vertebral body and posterior pars interarticularis (Aufderheide and Rodriguez-Martin 1998).

Two adult individuals were affected by spondylolysis. The condition was complete bilateral on the 5th lumbar vertebra of skeleton R3706 Woodingdean and skeleton R4267 Roedean.

Osteochondritis dissecans

This is a condition that results from repetitive stress and microtrauma (Ortner 2003) which in turn leads to the interruption to the normal blood supply and the death of cartilage and bone followed by their consequent separation from the normal position at the joint.

The condition was observed affecting the proximal articular facet of the right hallux (big toe) and the proximal phalanx of the right hallux of male skeleton HATMP100399.

Myositis ossificans traumatica

This is a type of soft tissue trauma that results from local trauma to muscle or tendon by an external force which in turn triggers an inflammatory response and the formation of new bone and connective tissue on the affected area (Saartje et al 2012).

It was observed in skeleton HAMPT100001 Slonk Hill I affecting the gastrocnemius muscle of the left fibula. Similarly, it was present in skeleton R3027 Moulsecoomb affecting the semimembranosus muscle of the right tibia.

Enthesopathies

These are another type of soft tissue trauma observed at the insertion of muscles and tendons into bone that can result from strenuous physical activity, occupation and mechanical factors such as differential strain and biomechanical changes in bone load, although they are highly correlated with age (Ponce 2010).

A number of bones and the entheses with muscle or ligament involvement were observed in skeleton R2315.3 Ditchling Road 3. In the upper limbs these were present in the right radius where the muscle biceps inserts and at the distal end of this bone where the muscle pronator quadratus inserts. The olecranon of the right ulna was also affected where the muscle triceps inserts. Finally, in the lower limbs the right tibia was affected at the soleus muscle insertion.

Schmorl's nodes

These nodes are depressions on the vertebral bodies that result from herniations of the nucleus pulposus material of the intervertebral discs (Aufderheide and Rodriguez-Martin 1998, Ortner 2003). These may result from repeated trauma due to exerting compression forces in the spine while bending, lifting weight or twisting motions (Roberts and Cox 2003).

This condition was observed affecting the spine of six skeletons. Skeleton 100402 Exeter Street and skeleton HA210862 Mile Oak showed Schmorl's nodes in the lumbar spine, skeleton HATMP100348 Slonk Hill II and skeleton R4267 Roedean were affected in the thoracic spine, and both thoracic and lumbar segments were affected in skeleton R3330 Blackrock, skeleton R3706 Woodingdean and skeleton R3428 Bevendean.

Congenital anomalies

Congenital anomalies refer to anomalies occurring during embryological development that affect the normal formation of organs and tissues (Ortner 2003).

A total of 18% (5/28) of the skeletons analysed had evidence of some form of congenital anomaly. Of these, two individuals (skeleton R3428 Bevendean and skeleton R3706 Woodingdean) exhibited persistent metopic sutures, a further two (skeleton R3027 Moulsecoomb and skeleton R3370 Blackrock) were found to have sacralisation of the L5 vertebra with the sacrum, and one individual (skeleton R2315/3 Ditchling Road) was affected by lateral deviation of the nasal septum.

Infectious diseases

These are a group of disorders that result from the invasion of agents into the body such as bacteria, viruses, fungi or parasites and produce an inflammatory response in the bone (Aufderheide and Rodríguez-Martín 1998, Ortner 2003).

Evidence for infectious disease was observed in 14% (4/28) of the skeletal population. One individual from Eldred Avenue (HATMP100046) was found to have pitting in the palate and also periosteal reactions in the long bones. The two individuals from Ditching Road had porosity in the glabellar region. Analysis of skeleton HAMPT100399, an adult male individual from the collection with unknown provenance, demonstrated a complex picture of infectious disease. There was porosity of the palate, secondary to dental infection, and hypervascularity evident in the calcaneus. In the ribs there was Infection to the posterior aspect of a significant number of ribs bilaterally with cloaca observed in some instances. There was apophyseal joint fusion through thoracic vertebrae T5-8. Vertebrae T2-10 showed signs of infectious infection. Their pathological condition led to an abnormal anterior-posterior bending of the spine suggestive of tuberculosis although this would be difficult to confirm.

Joint disease

Joint disease refers to degenerative conditions of the joints. A total 11% (3/28) of the skeletal population suffered from joint disease in the form of osteoarthritis. This was observed in skeletons R3027 Moulsecoomb (to the sternoclavicular joints), HATMP100348 Slonk Hill II (to the lumbar vertebrae) and HATMP100046 Eldred Avenue (to the humeroulnar joints bilaterally, the right humeroradial joint and the glenohumeral joints).

Metabolic conditions

Metabolic disease in bone is characterised by disturbances in formation, mineralisation and remodelling (Brickley, 2000, 183). There was one instance of a metabolic condition in the form of possible osteoporosis in the vertebrae and pelvis of skeleton R3027 Moulsecoomb, a mature adult male individual. Although osteoporosis is often associated with post-menopausal females, it can occur in both sexes and can result from poor diet or old age (Walker, 2012,186).

Neoplastic conditions

The term neoplasm refers to ‘new tissue’ or ‘mass of new tissue’. Neoplastic tissue can be benign or malignant depending on whether its proliferation is capable of destroying surrounding cells or not (Aufderheide & Rodríguez-Martín 1998).

Benign neoplastic conditions

Button osteoma

The most commonly found neoplasms in archaeological populations are button osteomas. These are raised areas of dense bone that resemble a small mound or dome (Mann and Hunt, 2005). One example was found in this skeletal population, in skeleton HATMP100399 on the right frontal bone.

RADIOCARBON DATING

The results of the first group of radiocarbon dating samples are shown in Table 7.

Museum Ref No	Site	Radiocarbon date (95% confidence)
R2430	London Road, Patcham	1230-1031 cal BC
R3016	Surrenden Road	794-541 cal BC
HATMP100001	Slonk Hill	393-206 cal BC
R3027	Moulsecoomb	92-63 cal BC
R2574	East Brighton Golf Club	1891-1699 cal BC
R3330	Blackrock	784-519 cal BC

Table 7: showing the calibrated date ranges of the samples analysed to date

FURTHER WORK

This has been a valuable exercise in identifying the extent and content of the human remains collection at Brighton's Royal Pavilion and Museums. It has generated information on the prehistoric people of Brighton and Hove as a discrete geographic area with data on demography, palaeopathology, dating and burial practice. It is now possible to build on this to further analyse the collection, particularly in relation to the radiocarbon dating evidence, to gain further understanding in the context of the wider picture of prehistory in the Brighton and Hove area, the region of southern England and further afield.

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APPENDIX 9 – NOTES ON THE NEOLITHIC HUMAN REMAINS FROM CISSBURY FLINT MINES HELD IN THE NATURAL HISTORY MUSEUM COLLECTION

Three skeletons recorded as being found in the Neolithic flint mines at Cissbury:

Date	**Location**	**Age/Sex**	**Excavator**	**Museum**
1875	Shaft H	Adult female	Park Harrison	Natural History Museum
1878	Shaft VI	Adult male	Pitt Rivers	Natural History Museum
1953	Shaft 27	Adult female	Pull	Worthing Museum

The skeleton from Shaft 27 is held in the Worthing Museum collection. Some post-cranial elements from one of the other Cissbury skeletons are currently on display at Worthing Museum (details tbc).

From pers comm with Elissa Menzel, Curatorial Assistant, Natural History Museum:
Some of the human remains in the NHM came from the Pitt Rivers Museum via the Oxford Museum of Natural History (ONHM) bearing labels from Pitt Rivers Museum. Others in the NHM were simply excavated by Pitt Rivers and went to NHM via Oxford Museum of Natural History in the 1950s and contained a number of remains collected by Canon Greenwell and George Rolleston, colleagues of Pitt Rivers and involved in the Cissbury excavations.

The following human remains at the Natural History Museum are likely to have come from Pitt Rivers' excavations at Cissbury but were kept by Rolleston in the ONHM. The index card which came with the remains says:

> E.11.1/1&2, E.11.87/429
> These ONHM registration numbers correspond with NHM registration numbers:
> SK 1781 (crania comingled), SK 1782 (post-crania comingled)
> *CISSBURY*
> *Neolithic or Early Iron Age?*
> *2 boxes. One contains skulls and mandibles, some juvenile.*
> *Other contains animal bones & human vertebrae.*
> *JRAI 1878 G. Rolleston: crouched burials in flint mines, Cissbury: one male and one female, male having right hemiplegia (paralysis).*

SHAFT H (aka Skeleton Shaft)

Cranium from box E.11.8/429 Greenwell collection, SK 2249

Corresponds with report and illustrations in Rolleston (1877) on Shaft H skeleton, specifically:
- Description and illustration of cranium as 'aphaenozygous' (p35)
- Description and illustration of healed depression in right parietal bone (p35)

Left mandible fragment E.11.1.? 154.6.4, SK 1781 & 1782

Partially corresponds with report in Rolleston (1877) on Shaft H skeleton, specifically:
- Description of left premolar broken midway between its crown and neck during life exposing its pulp cavity
- However, report also refers to alveolar abscess just above mental foramen in relation to premolar above and this is not apparent, although mandible fragment ends at this point
- Possible that broken premolar is from another mandible?

Sternum fragment E.11.1?

From box containing comingled human remains labelled ‘in here di, diii, div, dv, dvi, 10.4.58’ & ‘Cissbury. British with drinking cup of Bronze time’. Manubrium plus one section of corpus sterni, partially fused:

- Could correspond with Rolleston (1877) p33 description of ‘…what is somewhat surprising, the five bones of the sternum are all but completely ankylosed

SHAFT VI

Crania from SK 1781 & 1782

- Going by my photographs from December 2017, two of the three incomplete, reconstructed crania are physically similar to the damaged cranium shown in the *in situ* photograph from Rolleston (1879). It seems possible that one of these crania is from the Shaft VI burial.

- In my reassessment, based on the crania alone without foreknowledge of their potential connection to Shaft VI specifically, I felt that one (bii) was of indeterminate sex and the other (labelled ‘British skulls Cissbury uncertain’) was probably male. Rolleston described the Shaft VI skeleton as having ‘marked masculine’ skull characteristics which suggests that the latter of these two crania is the most likely contender.